Public Service Commission of Wisconsin

Rebecca Cameron Valcq, Chairperson
Ellen Nowak, Commissioner
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4822 Madison Yards Way
P.O. Box 7854
Madison, WI 53707-7854

July 7, 2022

To the Parties:

Re: Quadrennial Planning Process IV – Phase II 5-FE-104

Comments Due:	Address Comments To:
Thursday, July 28, 2022 - 1:30 p.m.	**5-FE-104** Public Service Commission P.O. Box 7854 Madison, WI 53707-7854
This docket uses the Electronic Records Filing system (ERF).	

The Commission memorandum concerning Quadrennial Planning Process IV, Phase II is being provided to the parties for comment. Comments must be received by 1:30 p.m. on Thursday, July 28, 2022. Party comments must be filed using the Commission's ERF system. The ERF system can be accessed through the Public Service Commission's web site at http://psc.wi.gov. Members of the public may file comments using the ERF system or may file an original in person or by mail at the Public Service Commission, 4822 Madison Yards Way, P.O. Box 7854, Madison, WI 53707-7854.

Please direct questions about this docket or requests for additional accommodations for persons with a disability to the Commission's docket coordinator, Jolene Sheil at (608) 266-7375 or Jolene.Sheil@wisconsin.gov.

Sincerely,

Kristy Nieto
Division Administrator
Division of Digital Access, Consumer and Environmental Affairs.

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Attachments

PUBLIC SERVICE COMMISSION OF WISCONSIN

Memorandum

July 7, 2022

FOR COMMISSION AGENDA

TO: The Commission

FROM: Kristy Nieto, Administrator
Tara Kiley, Deputy Administrator
Joe Pater, Director, Office of Energy Innovation
Mitch Horrie, Performance Manager, Focus on Energy
Jolene Sheil, Portfolio Manager, Focus on Energy
Division of Digital Access, Consumer and Environmental Affairs

RE: Quadrennial Planning Process IV 5-FE-104

Phase III - Micro Implementation, Cost Effectiveness and Budget for Quad IV

Suggested Minute: The Commission directed the Division of Digital Access, Consumer and Environmental Affairs to draft an Order consistent with its discussion.

Quadrennial Planning Process

The Commission oversees Wisconsin's statewide energy efficiency and renewable resource programs, known as Focus on Energy (Focus). Wisconsin Stat. § 196.374(3)(b)1. requires the Commission to evaluate and set goals for the Focus programs as part of a Quadrennial Planning Process, among other statutorily identified tasks:

> At least every 4 years, after notice and opportunity to be heard, the commission shall, by order, evaluate the energy efficiency and renewable resource programs under sub. (2) (a) 1., (b) 1. and 2., and (c) and ordered programs and set or revise goals, priorities and measurable targets for the programs. The commission shall give priority to programs that moderate the growth in electric and natural gas demand and usage, facilitate markets and assist market providers to achieve higher levels of energy efficiency, promote energy reliability and adequacy, avoid adverse environmental impacts from the use of energy, and promote rural economic development.

In conjunction with the Commission's obligations to continually evaluate the Focus programs, Wis. Stat. § 196.374(5m)(b) requires that the Commission ensure "that customers throughout the state have an equivalent opportunity to receive the benefits of" statewide energy efficiency and renewable resource programs. Wisconsin Stat. § 196.374(2)(a)2. identifies specific components that must be included in the Focus programs. The Commission's decisions in the first Quadrennial Planning Process (PSC REF#: 141173) covered the 2011-2014 period for management of the Focus program. The decisions in the Quadrennial Planning Process II (PSC REF#: 215245) were in effect for the 2015- 2018 period, and decisions made in the Quadrennial Planning Process III are in effect for the 2019- 2022 period. (PSC REF#: 343909.)

Background

On March 19, 2020, the Commission issued a Notice of Investigation in this docket to evaluate the energy efficiency and renewable resource programs (both the statewide Focus on Energy program and utility voluntary programs) and to determine their appropriate goals, priorities, and measureable targets. (PSC REF#: 386022.) In the Notice of Investigation, the

Commission indicated it would follow a process similar to the one used in the Quadrennial Planning Process III (Quad III Planning Process) docket while opening this docket earlier in the process to provide sufficient time to conduct an energy efficiency potential study. The potential study was finalized by the Focus Program Evaluator, Cadmus Group, Inc. (Cadmus), on September 10, 2021. (PSC REF#: 420467.) In addition, in its Final Decision of March 10, 2021, the Commission authorized funding for Cadmus to conduct a rooftop solar photovoltaic (PV) potential study to inform the Quadrennial Planning Process IV (Quad IV Planning Process). (PSC REF#: 406592.) A Rooftop Solar PV Potential Study was conducted and finalized by Cadmus on October 4, 2021. (PSC REF#: 421984.) Six organizations, including: Clean Wisconsin, RENEW Wisconsin, the Wisconsin Industrial Energy Group, the Midwest Renewable Energy Association, Citizen's Utility Board (CUB), and AXIOM Energy Group (Axiom Energy) requested intervention in this docket. (PSC REF#: 386323), (PSC REF#: 386749), (PSC REF#: 386538), (PSC REF#: 387677), (PSC REF#: 422105), and (PSC REF#: 422139), respectively.

In its memorandum dated October 26, 2021, Commission staff sought comments on the appropriate Scope of the Quad IV Planning Process. (PSC REF#: 423921.) The Commission received comments from 14 organizations or individuals: Wisconsin Utilities Association (WUA) (PSC REF#: 426016), CUB (PSC REF#: 426104), Vermont Energy Investment Corporation (VEIC) (PSC REF#: 426094), Wisconsin Local Government Climate Coalition (WLGCC) (PSC REF#: 426092), Axiom Energy (PSC REF#: 425980), Clean Wisconsin (PSC REF#: 426056), Slipstream (PSC REF#: 426098), RENEW Wisconsin (PSC REF#: 426038), American Council for an Energy Efficient Economy (ACEEE) (PSC REF#: 426071), Rocky Mountain Institute (PSC REF#: 426103), Wisconsin's Greenfire (PSC REF#: 426050), APTIM

(PSC REF#: 426099), Evaluation Workgroup (EWG) (PSC REF#: 426080), and Lila Zastrow and Dave Hendrickson (PSC REF#: 426025.)

The Commission issued an Order on December 16, 2021, establishing the Scope of the Quad IV Planning Process in Table 1 below. (PSC REF#: 427426.) There are three interconnected phases to Quad IV planning process and this memorandum will address the topics in Phase II, with Phase III following during the fall of 2022. Please note that the timelines have been updated for Phases II and III since the original table was created and some topics appear in a different order.

Table 1: Quad IV Topics and Timelines

Phase in Quad Planning	Quad IV Topics	Timeframe
Phase I- Macro Policies and Priorities	1. Alignment of Focus Performance goals and program offerings with decarbonization goals 2. Electrification programs and offerings 3. Programs and offerings for low-income customers 4. Collaboration between Focus and Utility Demand Response Programs 5. Utility Voluntary Programs	January – April
Phase II - Micro Implementation Decisions	1. How should overall energy goals be stated and tracked? 2. Emphasis between Energy and Demand 3. Emphasis between Business and Residential 4. Inclusion of Underserved Rural Areas 5. Resource Acquisition and Market Transformation	April – August
Phase II – Cost Effectiveness Decisions	1. Primary and Secondary Cost-Effectiveness Tests - 2. Carbon Value 3. Avoided Costs 4. Discount Rate 5. Avoided Transmission & Distribution (T&D) Costs	April – August
Phase in Quad Planning	**Quad IV Topics**	**Timeframe**
Phase II – Budget Issues	1. Energy Efficiency 2. Renewables 3. Environmental & Economic Research & Development 4. Other	April – August
Phase II – Other	1. Does the Commission need to approve pilots for behavioral programs?	April – August
Phase III	Goals, Targets, and Key Performance Indicators (KPIs)	Fall 2022

Phase I was addressed by the Commission on April 7, 2022. Attachment A includes a summary of the Commission's decisions in Phase I. Attachment B provides a list of the individuals and organizations submitting comments. This memorandum will address the topics in Phase II.

Phase II presents the Commission with various micro policy and priority alternatives. The Commission may wish to be mindful that the selection of certain alternatives in Phase II, may correlate with Phase I decisions. Attachment C includes a summary of the Phase II decision alternatives and staff notes where those decisions may link to the Commission's Phase I decisions.

I. PRIORITIES

A. How Should Overall Energy Goals be Stated and Tracked?

Before determining specific options for the value of energy savings goals for Quad IV in Phase III of the Quad IV Planning Process, the Commission can address two issues related to how energy goals are defined. First is whether to continue setting goals expressed in the combined metric of British thermal units (Btus) with minimum performance requirements (MPRs) for both electric and natural gas savings, or to modify the goal structure. A modified goal structure may either eliminate a combined Btu goal and only set fuel-specific goals or set a single fuel-neutral goal in Btus and eliminate fuel-specific targets. The second issue is determining whether to continue setting the Program Administrator and Commission savings goals in lifecycle savings or to establish goals based on first-year savings. Commission staff will use decisions on both topics to determine how to present the goals for the Commission's review in the Phase III memorandum.

Prior quadrennial planning processes have addressed the structure of Focus' goals for energy savings. The structure of Focus' energy goals has evolved somewhat over time. However, since it was determined in Quad I that Focus' annual budget was likely to remain relatively constant year-over-year, certain aspects of the program's goal structure have remained consistent, specifically, basing goals on actual energy savings rather than percent savings and setting Program Administrator contract performance goals in gross lifecycle savings. Table 2 presents a timeline of the Commission's decisions on these issues.

Table 2. Historical Structure of Focus' Energy Goals

Period	Focus on Energy Savings Goals Structure	Rationale
Quadrennial Planning Period I, 2011-2014[1]	• Goals are expressed as a percent of projected energy usage and demand	• Consistent with other states and recommendations from the Governor's Task Force on Global Warming
Quadrennial Planning Period I, 2011-2014 (Revised)[2]	• Changed to a savings goal expressed as actual energy and demand savings • Commission adopts net annual savings goals • SEERA and Program Administrator negotiate lifecycle savings contract goals based on the net goals adopted by the Commission	• Straightforward approach given that Focus' budget would remain relatively constant year-to-year • Lifecycle goals reflect the true value of savings achieved • Net savings preferred in determining cost-effectiveness • Gross savings preferred for evaluating Program Administrator performance
Quadrennial Planning Period II, 2015-2018[3]	• Overall energy savings goal expressed in lifecycle MMBtu • Minimum kWh and therm savings thresholds • Program Administrator's contract goal based on gross lifecycle savings	• Minimum savings threshold structure balances Program Administrator ability to adapt to changing markets while ensuring benefits opportunities for gas and electric customers

Period	Focus on Energy Savings Goals Structure	Rationale
Quadrennial Planning Period III, 2019-2022[4]	• Maintain an MMBtu goal with minimum thresholds by fuel • Commission's goal set on net lifecycle savings • Program Administrator's contract goal based on gross lifecycle savings	• The Commission shifted its historic practice of basing its goal on net annual savings to a goal based on net lifecycle savings to align with the Program Administrator's goal structure

[1] PSC REF#: 141173 at 3-4.
[2] PSC REF#: 158228 at 2-3.
[3] PSC REF#: 215245 at 17.
[4] PSC REF#: 343909 at 12.

Overall Savings Goals and Specific Goals for kWhs and therms

In Quad I of Focus, the Commission approved an amendment to the Program Administrator's contract to allow the use of "an exchange rate to trade therms for kilowatt-hour (kWh) savings for the purposes of evaluating whether [the Program Administrator] has met its contractual goals." (PSC REF#: 198182.) An exchange rate was viewed as a mechanism to provide the Program Administrator with flexibility to achieve therm savings goals if market factors outside of the program's control, such as natural gas prices, impacted customer demand for projects savings therms. Under this approach, the Program Administrator could claim credit toward its therm goal for achieving additional electric savings in place of difficult-to-obtain therm savings.

In both Quad II and Quad III, the Commission set an overall savings goal expressed in millions of Btu (MMBtu) with MPRs for therms and kWh. These MPRs, or savings targets, were put in place to provide the Program Administrator flexibility in achieving the overall savings goal similar to the aforementioned exchange rate provision. To minimize cross-subsidization between the electric and gas customers contributing to Focus funding, the MPRs were set so that 90 percent of the individual therm and kWh goals were required to be met, and

only the remaining 10 percent of the overall MMBtu goal could involve savings from either natural gas and electric savings converted to MMBtu.

Historically, the variability of the price of natural gas has led to certain challenges in achieving minimum therm savings targets. These challenges have not similarly impacted the Program Administrator's ability to achieve kWh savings, due in part to the fact that electricity prices tend to be less volatile year-to-year. Notably, the *2021 Focus Energy Efficiency Potential Study* (*2021 EE Potential Study*) showed a significant decrease in available cost-effective natural gas savings potential compared to the prior study completed in 2017. (PSC REF#: 420467 at 9.) This change is primarily attributed to the fact that avoided costs of natural gas observed in Quad III and applied to cost-effectiveness testing and the *2021 EE Potential Study* modeling were more than 30 percent less compared to values observed during Quad II of Focus. The *2021 EE Potential Study* also found that although lower avoided costs also led to fewer cost-effective measures that save electricity, electric savings potential under current program funding levels and policies remains relatively comparable to recent achievements.

Concerns raised during the current quadrennium over the COVID-19 pandemic's impact on the Program Administrator's ability to achieve its Quad III savings targets, particularly natural gas savings, led Commission staff to seek the Commission's direction on the appropriateness of the Quad III 90 percent MPR savings threshold for kWh and therms. (PSC REF#: 421795.) Relaxing the MPR would allow the Program Administrator to meet a greater proportion of the overall MMBtu savings goal with kWh. This in turn would provide the Program Administrator greater flexibility to achieve its contract performance goals given the difficulties encountered in achieving therm savings and continued uncertainty associated with the pandemic's impact on the program. The Commission determined that since the full impacts of

the pandemic were not known, it was reasonable to take no action to adjust the MPR savings thresholds for Quad III in response to those impacts. (PSC REF#: 423549.)

The Commission can consider continuing its practice of setting an overall savings goal for Focus with MPRs for kWh and therm savings. Continuing this practice would carry forward the Commission's decisions in prior Quad Planning Processes to allow the Program Administrator to have some flexibility in how the quadrennium savings goals are achieved. Under this framework, the Commission may also want to consider appropriate MPR thresholds by fuel; adjusting the threshold from 90 percent to a lower value would be appropriate if the Commission finds it reasonable to allow to better align the impact the variable cost of natural gas has on the program. If an overall savings goal with MPRs for kWh and therm savings is preferred, sub-alternatives present a number of options for MPR thresholds by fuel type. Once the MPRs are achieved, the Program Administrator could achieve the remainder of the overall MMBtu savings goal with either fuel.

Alternatively, the Commission may prefer to set an overall MMBtu savings goal without fuel-specific MPRs (i.e., a fuel-neutral savings goal). An overall MMBtu goal without fuel-specific MPRs would maximize the Program Administrator's flexibility in meeting the overall MMBtu savings goal cost-effectively. This type of goal may also allow for flexibility in prioritizing measures for their ability to generate certain desired system benefits such as avoided utility costs or avoided carbon emissions. With an overall MMBtu savings goal without fuel-specific MPRs, the Program Administrator, with the oversight of Commission staff, would need to ensure programs meet statutory requirements under Wis. Stat. § 196.374(5m)(a) to ensure equitable opportunity to receive grants and benefits equal to the amount recovered from the

customer class. That is, to address the potential for cross-subsidization of electric and gas customers' contributions to Focus.

Lastly, the Commission may find it appropriate to deviate from its practice in Quad II and Quad III of setting an overall savings goal with MPRs for kWh and therm savings and instead only set kWh and therm savings goals. This approach would be appropriate if the Commission finds that an overall savings goal does not align with its priorities for the program.

Commission Alternatives – Overall vs. Fuel-Specific Savings Goals

Alternative One: Status Quo. Establish an overall MMBtu savings goal with minimum performance requirement thresholds for kWh and therm savings.

Sub-Alternative A: Status Quo. Minimum performance requirement thresholds set at 90 percent of fuel-specific goals.

Sub-Alternative B: Minimum performance requirement thresholds set at 80 percent of fuel-specific goals.

Sub-Alternative C: Minimum performance requirement thresholds set at 75 percent of fuel-specific goals.

Sub-Alternative D: Minimum performance requirement thresholds set at another percent consistent with the Commission's discussion.

Sub-Alternative E: Defer the selection of minimum performance requirement thresholds until Phase III of Quadrennial Planning Process IV.

Alternative Two: Establish an overall MMBtu savings goal. Track kWh and therm savings, but do not set fuel-specific savings targets.

Alternative Three: Do not establish an overall MMBtu energy goal and keep specific kWh, and therm goals.

Lifecycle vs. Annual Savings Goals

Since Quad I of Focus, the Commission has found it reasonable to establish the Program Administrator's contract goals in lifecycle savings (see Table 2 above). The Commission's decision in Quad I determined that lifecycle savings goals were appropriate because, "they reflect the true value of the programs and will appropriately signal Program Administrators to focus on measures that provide savings over long periods". (PSC REF#: 141173 at 7.)

Under a lifecycle savings framework, annual (i.e., first-year) savings by measure are multiplied by its corresponding effective useful life (EUL) to derive the estimated savings over the lifetime of the measure. This approach encourages the Program Administrator to deliver programs and offerings that emphasize longer-lived technologies. It also requires the program to project how long each measure will remain in place and operational.

The program has invested considerable time and resources to support the Commission's decisions in prior Quadrennial Planning Processes setting lifecycle savings goals. This includes developing and continually assessing measure-level EUL assumptions. With a lifecycle savings goal, measure-level EUL assumptions are of great importance to all aspects of program design and delivery, as well as for goal setting, and performance evaluation. Minor changes to EUL assumptions for certain measures can have significant impacts to program savings achievements.

Measure-level EULs are developed and approved through Focus' Technical Reference Manual (TRM) review process involving the Focus Evaluator, Program Administrator, Implementers and Commission staff. Supporting rationale for the assumptions are documented in TRM workpapers to the extent practical.

Many of the measures currently promoted through the program, such as appliances and building shell improvements, have relatively long useful lives. Measures with relatively short

EULs (i.e., 5 years or less) tend to be categorized as operations and maintenance improvements such as HVAC tune-ups and process control optimization adjustments. While these measures are often highly cost-effective, under a lifecycle savings goal framework they typically receive less priority as standalone measures compared to cost-effective measures with longer EULs.

Under a lifecycle savings goal structure, a program may be indifferent to promoting measures that achieve high savings for a short period of time versus measures that achieve lower savings for a longer period of time. Alternatively, under a first-year savings goal structure a program may be indifferent to promoting measures with the same first year savings, even if one of the measures has a lifetime that is significantly longer. For example, consider a scenario where two measures both have first-year savings of 500 kWh, but one measure has an EUL of one year and the other has an EUL of ten years. With a first-year savings goal, both measures would be valued equally for their ability to meet the program's goal. However, under a lifecycle savings goal, the measure with a ten year EUL would be ten times as valued for its ability to meet the program's goal.

Commission Alternatives – Lifecycle vs. First-Year Savings Goals

The decision alternatives below seek the Commission's direction with respect to Focus' priorities for achieving savings goals.

A decision to maintain lifecycle savings goals would reinforce the priorities of past Commissions that the program emphasize measures for the ability to achieve savings over a long period of time. With a lifecycle savings goal, first-year savings would continue to be measured and reported. First-year savings are often what is publicly reported by other programs, so reporting these savings would allow for comparisons of Focus savings achievements to other programs to continue.

A decision to move from lifecycle savings goals to first-year savings goals would send a signal to the Program Administrator to target measures for their ability to achieve energy savings, regardless of the persistence of those savings over time. Even with a first-year savings goal, the Program Evaluator would continue to calculate program cost-effectiveness based on lifecycle costs and benefits using Commission approved inputs and avoided cost methodologies.

Alternative One: Status Quo. Establish Quad IV savings goals for Focus based on lifecycle savings. Continue to make first-year savings available for public reporting purposes.

Alternative Two: Establish Quad IV savings goals for Focus based on first-year annual savings. Continue to use lifecycle savings for purposes of evaluating portfolio cost-effectiveness.

Background – Energy and Demand Considerations

Among the Commission's statutory duties for Focus defined in Wis. Stat. § 196.374(3)(b)1. is to give priority to programs that moderate the growth in electric and natural gas demand and usage. The relative emphasis of this priority has been considered by the Commission during past Quadrennial Planning Processes. Load management is excluded from the statutory definition of an energy efficiency program as established in Wis. Stat. § 196.374(1)(d).[1] Therefore, in deciding the relative emphasis of the priority between the energy savings and demand reduction impacts of Focus, the Commission may want to consider the role the program can assume without the statutory authority to directly control or manage daily or seasonal demand associated with equipment or devices used by utility customers or members.

[1] Wis. Stat. § 196.374(1)(f) defines a load management program as "a program to allow an energy utility, municipal utility, wholesale electric cooperative, as defined in s. 16.957(1)(v), retail electric cooperative, or municipal electric company, as defined in s. 66.0825(3)(d), to control or manage daily or seasonal customer demand associated with equipment or devices used by customers or members".

In each of the three prior Quadrennial Planning Processes, the Commission has found it reasonable to establish Focus' goals based on reductions in energy usage (kWh and therms) and peak energy demand (kW), with more emphasis on energy use savings. In Quadrennial Planning Process II, the Commission's decision to emphasize energy savings included direction to track the emissions reductions associated with those savings. (PSC REF#: 215245 at 17.) The Commission's Quadrennial Planning Process III decision also directed the emphasis on energy savings and continued tracking of the resulting emissions reductions. (PSC REF#: 343909 at 14.) In Phase I of Quad IV Planning Process, the Commission directed the EWG to develop recommendations for enhanced measurement and tracking of Focus' carbon emissions reduction impacts. (PSC REF#: 435163.) Accordingly, the program's carbon emissions reduction impacts will continue to be tracked regardless of the Commission's decision on the relative emphasis between energy and demand, unless otherwise directed by the Commission.

The Commission's decisions to place greater emphasis on energy savings has been reflected in the Program Administrator's performance contract bonus structure. The Quad II Program Administrator contract (PSC REF#: 226701) provided bonuses for both types of savings, but included greater bonuses for energy savings (40 percent kWh, 40 percent therms, and 20 percent kW). The Quad III contract performance bonus is structured differently, but still emphasizes energy savings. In the Quad III contract (PSC REF#: 374855), savings-based performance bonuses are separated based on progress toward the four-year goals after two years and achievements at the end of the quadrennium. The year-two savings bonus (40 percent of the total available savings-based bonus) pertains only to progress toward the quadrennium energy savings goal. The end-of-Quad portion of the bonus requires the Program Administrator to

achieve 102 percent of the energy savings target and meet 100 percent of the quadrennium demand goal.

Stakeholder comments in the Quad IV Planning Process docket point to Wisconsin's evolving power generation landscape and an overall acceleration toward decarbonization as key considerations in determining Focus' emphasis between energy and demand. CUB's comments note that the retirement, or retirement announcement, of a number of large coal-fired generation facilities coupled with utility investments in new supply sources have led to a period of transformation where the generation capacity and resource adequacy are "once again at the fore in Wisconsin". (PSC REF#: 426104.) The WUA's comments indicate support for an emphasis on energy savings, noting that energy consumption is the most appropriate program metric if the Commission's objective is to align with the state's carbon reduction goals. (PSC REF#: 426016.) The WUA further elaborates that as the grid transitions towards a greater mix of renewables, the program should consider when energy savings occur since generation from these resources can be unpredictable and intermittent and the carbon emissions benefits achieved may be greatest at times outside of Focus' traditional peak period. (*Id.*)

The current approach of emphasizing energy savings also produces significant reductions in demand and Focus has played an important role in reducing the need for additional generation capacity in the state. The grid's transition toward more renewable generation capacity, along with a movement toward electrification of certain end uses of energy (e.g., space heating, water heating, transportation), may shape the Commission's decision on Focus' relative emphasis between energy and demand in Quad IV. These considerations may also factor into the Commission's decisions on incremental steps the program can take in Quad IV. As discussed later in this section, these issues carry with them certain foundational analytical considerations

that the program can begin to explore in Quad IV to inform future Commission decisions on this topic.

Program Considerations – Emphasis between Energy and Demand

Focus' relative emphasis between reducing energy usage and achieving demand reductions has important implications for program design and implementation. Under the current framework of a greater emphasis on energy savings, the Program Administrator works with Program Implementers to design and deliver programs that can achieve energy savings at a cost of acquisition aligned with available budgets while meeting certain budget requirements (e.g., budget carve-outs for renewables and rural programs, and balancing business and residential budgets aligned with Commission direction).[2] The Program Administrator pays careful attention to the cost of acquisition of energy savings, as it is an important metric in setting incentive levels and planning for program delivery efforts.

In the current quadrennium, kW reduction achievements have lagged kWh savings, with respect to progress toward quadrennium goals. This is in part due to Focus' deliberate emphasis on energy savings and the balance of cost of acquisition for energy savings and demand reduction within available budgets. Focus' lifecycle savings framework may also play a role in this outcome. As discussed below, maintaining parity between the program's ability to cost-effectively attain lifecycle energy savings and demand reduction can present certain challenges.

For many measures, the cost of acquisition for energy savings and demand reduction are well-aligned. That is, the cost for the program to acquire a lifecycle MMBtu of savings is in relative proportion to the cost for the program to acquire a kW of savings. Commercial lighting measures offer one example. Since most businesses operate during the traditional summer peak

[2] Cost of acquisition refers to program expenditures necessary to attain a unit of savings (e.g., dollar per MMBtu).

period, commercial lighting measures contribute to the program's summer coincident peak demand reduction. Residential lighting measures also reduce demand, though since fewer homes are occupied during the peak period, their relative contribution is less compared to commercial lighting measures. Nevertheless, residential lighting has historically been among the least cost options for delivering energy savings and demand reductions.[3] The program's ability to continue to rely on lighting savings is expected to decrease going forward and will have impacts on achievable energy savings and demand reductions. This consideration is further elaborated upon in the *Balance between Resource Acquisition and Market Transformation* section of this memorandum.

For some measures, the energy savings and demand reduction costs of acquisition are not well-aligned. For these measures, a programmatic emphasis on energy savings can lead to tradeoffs in determining whether and how to include them within a program portfolio measure mix. For example, during Quad III, the Program Administrator eliminated incentives for residential air conditioning units due to their high energy savings cost of acquisition. HVAC cooling units operate for only a short period of the year, with a significant portion of their annual hours of use occurring during the summer peak demand period. In that respect, HVAC cooling units are more cost-effective at achieving demand reductions than energy savings.

A shift toward greater emphasis on demand reduction may lead the Program Administrator to reassess the role of HVAC cooling units and other measures with similar patterns of use within the program. Currently, measures with low hours of use that operate primarily during the peak period (e.g., air conditioners and certain agriculture measures that

[3] Mims Frick, N., Hoffman, I., Goldman, C., Leventis, G., Murphy, S., and L. Schwartz. (2019). *Peak Demand Impacts from Electricity Efficiency Programs*. Lawrence Berkeley National Laboratory. Accessed from: https://eta-publications.lbl.gov/sites/default/files/cost_of_saving_peak_demand_20200902final.pdf.

operate only during the growing season) are not prominently featured within Focus' portfolio of measures. A greater emphasis on demand reduction may result in the program shifting its assessment of these types of measures based upon their ability to achieve demand reduction cost-effectively. On the other hand, measures with low hours of use coincident with the peak demand period, such as exterior lighting, would be of less value with a shift toward greater emphasis on demand reduction.

Focus' historical emphasis on energy savings has led to the program prioritizing measurement of annual and lifecycle savings without devoting significant resources toward developing a detailed understanding of its demand reduction achievements and potential. A greater emphasis on demand reduction would require the program to refine its understanding of the mix of available measures capable of achieving savings during a peak period while balancing the portfolio's cost acquisition to achieve targets for both types of savings. Practical steps necessary to implement a shift toward a greater emphasis on demand reduction include:

- An updated review of Focus' peak period definition to understand which measures save energy during the peak period (see next section).
- Revisions to measure savings in the Focus TRM to appropriately reflect savings achieved during an updated peak period definition.
- Integrating the work performed in the prior steps into an analysis of the cost of acquisition for demand reduction relative to energy savings to determine an appropriate measure mix and incentive levels within the program's budget constraints.

A greater emphasis on demand reduction may shift the profile of benefits generated by the program. Whereas the benefits of off-peak kWh savings accrue primarily to the customer in the form of bill reductions, on-peak kWh savings capture additional benefits that accrue to all ratepayers by reducing the use of higher cost peak kWh, improving grid reliability and resiliency, and reducing the need for capital investments in new generation capacity.

Summer Peak Period Definition

Focus defines a peak period for purposes of measuring the program's demand reduction impacts. Historically, the peak period has been defined as 1:00 to 4:00 p.m. on weekdays in June, July, and August. This definition is currently in use during Quad III. In 2021, Cadmus analyzed updated system load shapes to understand if Focus' peak period definition remains appropriate.[4] The EWG reviewed this analysis and concluded that Focus' current peak period definition is outdated and a revised definition is needed and should be applied beginning in Quad IV. The analysis found that Wisconsin's peak summer demand has shifted to later in the afternoon and extends into the month of September. The EWG's consensus recommendation favored a new peak period definition of 2:00 p.m. to 6:00 p.m. on weekdays in June, July, August, and September. This period was preferred because it struck a balance between capturing hours at the highest level of summer demand while excluding hours where demand was less than 90 percent of the seasonal maximum average. Conversely, Focus' historical peak period definition underperformed compared to almost all of the peak periods investigated in the analysis. Table 3 compares the performance of Focus' historical peak period definition to the peak period definition to be applied going forward.

Table 3. Summer Peak Period Performance

Peak Period	**Capture Rate top 10% of Demand Hours**	**Capture Rate: Top 5% of Demand Hours**	**Capture Rate: Top 1% of Demand Hours**	**Capture Rate Top 0.1% of Demand Hours**
June - August, 1-4 p.m. *Old Peak Period*	28%	31%	29%	23%
June – September, 2-6 p.m. *New Peak Period*	46%	56%	78%	100%

[4] The Cadmus Group. (2021). *Wisconsin Peak Period Analysis*. Accessed from: https://focusonenergy.com/sites/default/files/inline-files/Potential_Study-Research-Peak_Period.pdf.

Determining an appropriate summer peak period definition is a necessary step in accurately accounting for Focus' peak demand reduction impacts as well as its role in reducing carbon emissions and deferring the need for capacity-related capital investments. Developing a better understanding of the program's impacts on demand and how those impacts can contribute toward positioning Focus to support a cost-effective transition towards a decarbonized grid may also require the program to look beyond achieving just summer peak electric demand reductions. A discussion of considerations for establishing a winter peak electric demand period and a winter peak natural gas demand period is presented later in this section.

In weighing its decision on the emphasis between energy and demand, the Commission may want to consider investing in research during Quad IV to support future policy decisions in this area. Staff presents one such opportunity in the section below based on recent industry developments focused on the role of energy efficiency and renewable resources in meeting energy system and climate policy needs.

B. Time-Varying Value of Energy Efficiency and Renewable Resources

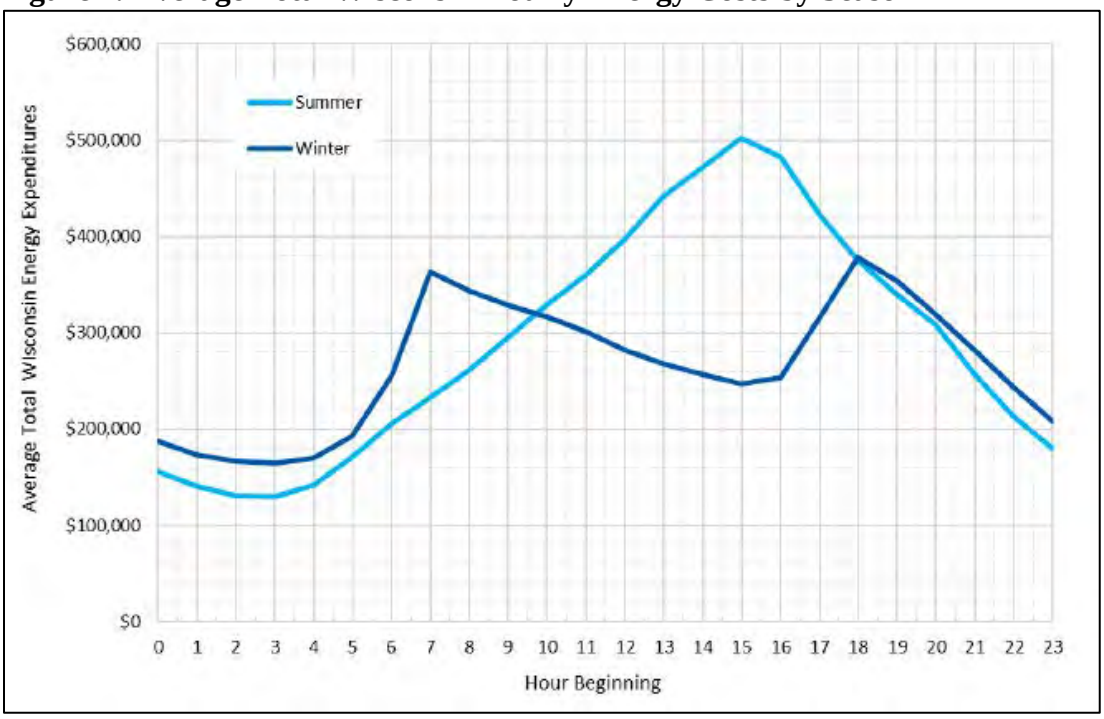
Understanding the time-varying value of energy savings can inform prioritization of measures that provide customers and the overall energy system with the greatest value, looking beyond just the avoided carbon emissions benefits they generate.

A number of stakeholder comments from Phase I of Quad IV Planning mentioned advantages of incorporating the time-varying value of energy into Focus operations. The Industrial Customers Group's (ICG's) comments point to its interest in examining more granular and forward-looking information on system peaks, recognizing the overall system benefits of efforts aimed at reducing demand at peak. (PSC REF#: 434182 at 4-5.) The WUA's Phase I comments acknowledged the customer benefits that can come with targeting customer usage at

certain times of day based on system needs. (PSC REF#: 434220.) Clean Wisconsin identified the Department of Energy Lawrence Berkeley National Laboratory's (LBNL's) *Time-Sensitive Value Calculator,* in its Phase I comments as an existing resource that could be leveraged to estimate the emissions and avoided cost benefits of energy efficiency. (PSC REF#: 434025 at 4-5.)

The Phase I staff memorandum discussed research performed by Cadmus analyzing the current Wisconsin average hourly CO_2 emissions per megawatt-hour (MWh) of electricity generation by season. (PSC REF#: 432286 at 22-23.) This analysis found that, in Wisconsin, the carbon intensity of the grid is greatest during periods that coincide with peak energy demand. Therefore, under Wisconsin's current mix of generation resources, a unit of energy saved at peak results in greater carbon emissions reductions than a unit of energy saved outside of the peak period. The analysis also showed that average hourly energy costs in Wisconsin exhibit a pattern similar to average hourly system demand. That is, hourly day-ahead locational marginal prices (LMPs) typically peak during afternoons in the summer and during early mornings and evenings in the winter (see Figure 1). These findings offer one illustration of the time-varying value of energy efficiency and renewable resources in Wisconsin.

Figure 1. Average Total Wisconsin Hourly Energy Costs by Season



Research analyzing the load profiles of end uses of energy and energy saving measures[5] along with various characteristics of the energy system (e.g., system load shape, carbon intensity, and marginal cost of energy) has the potential to inform a deeper understanding of the program's ability to cost-effectively achieve multiple system benefits including reliability, adequacy, and environmental benefits. Focus does not currently have the analytical capability to account for the time-varying value of avoided energy and capacity costs of the measures it promotes with temporal specificity. Like many programs, Focus derives annualized avoided cost values that are applied equally to each unit of verified net savings achieved. Investment of program resources in Quad IV to analyze these time-varying benefits would support future decisions on Focus' priorities and targets, including the emphasis between energy savings and demand reduction. According to Cadmus, "understanding energy consumption at each time of day and year for various end uses would help Focus develop energy efficiency and demand response programs

[5] A measure load profile refers to the time-of-day variation in energy consumption for a particular end use of energy.

that best match the state's need, given available generation resources."[6] Prioritizing energy efficiency investments for their time-varying impacts is also featured among the American Council for an Energy-Efficient Economy's (ACEEE's) principles for climate-forward efficiency.[7]

Efforts within the energy efficiency industry are exploring ways to incorporate a time-of-use component into measuring the value of energy savings and demand reduction. As mentioned above, LBNL has been studying this issue and recently developed a free tool, the *Time-Sensitive Value Calculator*, to assist public utility commissions, state energy offices, utilities, and other stakeholders in estimating the hourly value of energy efficiency, solar energy generation and other distributed energy resources (DERs).[8] The *Time-Sensitive Value Calculator* estimates the net present value (NPV) of select energy efficiency and renewable energy measures over their lifetime by value stream. These value streams include the avoided costs attributable to energy efficiency and renewable energy resources to the overall energy system (e.g., avoided energy costs, avoided capacity costs) as well as avoided carbon emissions. LBNL identifies this research as a necessary step in identifying an affordable, equitable pathway to a decarbonized electricity grid. The figure below is an example of the types of data outputs generated by LBNL's *Time-Sensitive Value Calculator*. This output provides a visual comparison of the net

[6] Cadmus Group. (2021). *Wisconsin's Greening Grid: Effects of Carbon Intensity Changes on the Valuation of Energy Efficiency*. Accessed from: https://focusonenergy.com/sites/default/files/inline-files/Potential_Study-Research-Greening_Grid.pdf.
[7] Specian, M. and R. Gold. (2021). *The Need for Climate-Forward Efficiency: Early Experience and Principles for Evolution.* Washington, DC: American Council for an Energy-Efficient Economy. Accessed from: https://www.aceee.org/research-report/u2106.
[8] Mims Frick, N., Carvallo, J.P., and M. Pigman. (2022). *Time-Sensitive Value Calculator for Energy Efficiency and Other Distributed Energy Resources.* Electric Markets & Policy, Energy Analysis & Environmental Impacts Division, Lawrence Berkeley National Laboratory. Accessed from: https://eta-publications.lbl.gov/sites/default/files/tsv_user_manual.pdf.

present value of the energy system and environmental benefits for select energy efficiency measures.

Figure 2. Example of LBNL Time-Sensitive Value Calculator Output

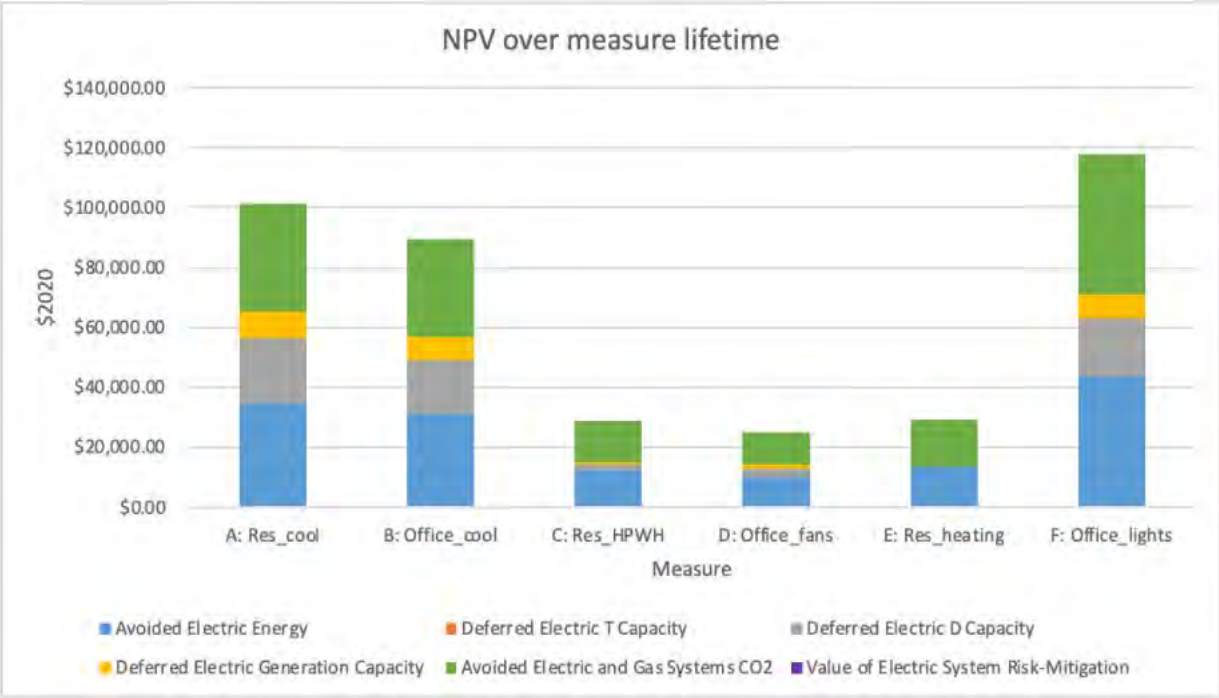


*Figure is an excerpt from an LBNL webinar presentation that can be accessed from: https://eta-publications.lbl.gov/sites/default/files/tsv_calculator_lbnl_final.pdf.

For example, a Michigan initiative is exploring the time-varying value of energy efficiency in practice in the Midwest. Following legislative action requiring the Michigan Public Service Commission (Michigan PSC) to create regulations for integrated resource planning (IRP), the Michigan PSC requested technical assistance from LBNL to explore opportunities to understand the time-varying value of energy savings.[9] A project contractor presentation from April 2022 notes that the effort is ongoing and progress is being made to integrate utility, end-

[9] Mims, N., Eckman, T., and L. Schwartz. (2018). *Time-Varying Value of Energy Efficiency in Michigan. Lawrence Berkeley National Laboratory*. Accessed from: https://eta-publications.lbl.gov/sites/default/files/lbnl_tve_michigan_20180402_final.pdf.

use, and savings load shapes into the Michigan Energy Measures Database.[10],[11] Cadmus staff supporting Focus have also been involved in the ongoing work in Michigan and have preliminarily identified efficiencies where this research could be adapted for Focus. Most notably, the DOE's National Renewable Energy Laboratory (NREL) has recently released a comprehensive database of residential and commercial building end-use load profiles for various climate regions of the U.S.[12] These data were developed to assist electric utilities, grid operators, manufacturers, and government agencies in making informed decisions regarding resource planning and regulation. Leveraging secondary data and tools such as the LBNL *Time-Sensitive Value Calculator* and NREL's database of end-use load profiles may allow Focus to make significant strides in its analytical capabilities at costs lower than were previously possible.

The Phase I staff memorandum also presented the concept of total systems benefits (TSB) recently adopted by the California Public Utilities Commission (CPUC) as the energy efficiency program performance metric to replace energy savings and peak demand reduction goals. TSB are calculated as the product of time-varying energy savings and avoided costs (including avoided carbon emissions) over the lifetime of an energy efficiency measure. Many of the benefits shown in Figure 2 above are also captured under California's TSB metric. A TSB metric is flexible because as the grid transitions toward greater reliance on carbon-free generation during times of peak summer demand, the profile of system benefits achieved by

[10] Cadmus and TRC. April 19, 2022. *Load Shape Research Overview and Update: EWR Collaborative.* Accessed from: https://www.michigan.gov/mpsc/-/media/Project/Websites/mpsc/workgroups/EWR_Collaborative/2022/CE_DTE_LoadShapes_Update.pdf?rev=9dc669d0da2c4e32a29e71a3d6c45c06&hash=011062C0EB085E73F1E5B8959BF8F48B.

[11] A utility load shape shows the time-of-day variation in energy demand for a utility. An end-use load shape shows the time-of-day variation in consumption from a particular end use of energy. A savings load shape shows the time-of-day variation in consumption from an efficient piece of equipment compared to the baseline option.

[12] National Renewable Energy Laboratory. *End-Use Profiles for the U.S. Building Stock.* Accessed from: https://www.nrel.gov/buildings/end-use-load-profiles.html.

saving energy during those periods are likely to shift. In that respect, a TSB metric looks beyond just carbon emissions benefits and seeks to maximize the total benefits to the energy system.

The Commission's decision in Phase I of Quad IV Planning to direct the EWG to develop recommendations for enhanced measurement and tracking of Focus' carbon emissions reduction impacts has the potential to improve the program's understanding of how the temporal savings profile of measures relate to program carbon emissions benefits. The Phase I staff memorandum identified that enhanced measurement of emissions reductions is likely to include pairing hourly load profiles of certain end uses of energy with hourly grid emissions rates. (PSC REF#: 432286 at 21.)

The Commission could consider expanding its Phase I directive to EWG by ordering Focus to perform research that seeks to understand ways to integrate enhanced quantification of other time-varying energy savings and system benefits in coordination with the EWG's investigation of enhanced measurement and tracking of carbon emissions impacts. Tying these additional research areas to EWG's investigation related to carbon emissions impacts at its outset would create efficiencies due to the overlapping benefits of temporal savings. This research could be funded out of the Quad IV Evaluation contract with the Commission or it may be appropriate as an Environmental and Economic Research and Development (EERD) Program initiative. Should the Commission decide to fund this research, one option could be for the delegated Commissioner to determine source of funding at a later date. This work could be performed early in Quad IV so that it could be incorporated into analysis and modeling efforts (e.g., Focus potential study) in support of planning and decision making for Quad V. Staff note that this is a developing area of interest in the industry and there may be unique challenges in the research and available data related to adapting the concept to a statewide program like Focus.

Nevertheless, the Commission may determine that it would be worthwhile to invest resources to better understand these challenges and opportunities. In particular, the Commission may determine that these efforts are aligned with its Phase I decision that more information, analysis, and planning are necessary to better understand the costs, benefits, and opportunities associated with alignment with decarbonization goals.

Commission Alternatives – Emphasis between Energy and Demand

Alternative One would establish both energy savings and demand reduction goals, with a greater emphasis on energy savings and resulting emission reductions. A choice of Alternative One would be consistent with the Commission's decisions in prior quadrennial periods and would maintain a status quo approach in terms of the Program Administrator's performance contract bonus structure. Under Alternative One, Sub-Alternative A would be appropriate if the Commission wants the program to maintain its current level of emphasis on demand reduction in Quad IV, but prefers to use Quad IV as a period to perform additional research and analysis to position the program to take on a greater role in achieving demand savings. EERD research from Quad III offers several options for future research that could be performed to inform Focus' path toward enhancing its offerings to yield greater benefits from demand savings.[13]

Alternative Two would indicate the Commission's preference to establish both energy savings and demand reduction goals and increase the program's emphasis on demand reduction in Quad IV compared to prior quadrennial periods. Alternative Two would be appropriate if the Commission sees a need for Focus to play a greater role in addressing issues related to electric generation capacity in the state. This may include an interest in Focus helping to ensure capacity

[13] Illume Advising, LLC. (2021). *Load Shaping Research: Case Studies FINAL*. Prepared for Focus on Energy. Accessed from: https://www.focusonenergy.com/sites/default/files/inline-files/Focus_Loadshaping_Report_Final_2021_01_15.pdf

as the state's generation sources transition from traditional coal-fired generation to a greater proportion of renewable energy.

Alternative Two differs from the longstanding approach of prioritizing the most cost-effective energy savings opportunities while tracking and claiming concomitant demand reduction and avoided capacity benefits. As such, staff anticipates that the program would experience a transitional period whereby various analyses are performed and evaluation guidance is developed to support this shifting emphasis. Alternative Two would reflect an active approach toward Focus taking on a larger role in ensuring capacity and reliability in the state. In its decisions in Phase III on Goals, Targets, and KPIs, the Commission would determine how rapidly to implement this approach during Quad IV, as it may take some time at the outset of the Quad to perform the foundational analysis of measures capable of delivering demand savings discussed earlier in this section, and other research such as those priorities identified in EERD research projects performed in Quad III. Operationalizing a choice of Alternative Two could come in the form of provisions in the Program Administrator's performance contract bonus structure that reflect greater emphasis on demand reductions compared to prior quadrennial plans. Commission staff observes that the Commission could find that a choice of Alternative Two would not affect the fact that load management is statutorily excluded from Focus' programs, or any of the barriers to implementing demand response initiatives described in the Phase I staff memorandum.

Alternative One: Status Quo. Establish Focus goals based on reductions in energy use and peak demand with more emphasis on energy use savings and associated emissions reductions. The Quad IV Program Administrator performance contract shall be structured to reflect this priority.

Sub-Alternative A: Direct Focus to perform additional research in Quad IV. At minimum, the objectives of this research shall be to position the program to assess strategies for enhancing programs to achieve greater demand savings and understanding the value of additional demand savings.

Alternative Two: Establish Focus goals based on reductions in energy use and peak demand and increase the program's emphasis on demand reduction, and therefore resulting emissions reductions, relative to prior quadrennial periods. The Quad IV Program Administrator performance contract shall be structured to reflect this priority.

Commission Alternatives – Time-Varying Value of Energy Efficiency and Renewable Energy Resources

Alternative One represents a choice to direct the investment of program resources into investigating opportunities for integrating the time-varying value of energy efficiency and renewable energy resources into Focus operations (e.g., planning, analysis, and quantification of impacts). This option may be appropriate if the Commission determines that this type of research is aligned with its Phase I decision to use Quad IV as a period to gather information and perform research and analysis to understand the costs and benefits of assuming a larger role in cost-effectively aligning with broader decarbonization goals. Developing a better understanding of the time-varying value of energy efficiency and renewable energy resources is one approach being adopted within the industry to inform planning and decision making on the pathway toward a decarbonized electricity grid. This work would be coordinated with the Commission's Phase I decision to direct the EWG to develop recommendations for enhanced measurement and tracking of the Focus' carbon emissions reduction impacts since both efforts will need to consider the impacts of energy efficiency and renewable resources temporally.

Exploring the time-varying value of energy efficiency could be used to support future decision making and would be consistent with a choice of Alternative One or Alternative Two in the *Emphasis between Energy and Demand* alternatives above. The program could continue to emphasize energy savings while performing this research and analysis in Quad IV to inform future policy decisions. Alternatively, if the Commission decides to increase Focus' emphasis on demand reduction in Quad IV, this will require the program to perform certain analyses to plan, design, and implement offerings aligned with this priority. Investigating opportunities to integrate the time-varying value of energy efficiency and renewable resources could be performed concurrent to an enhanced programmatic emphasis on demand reduction.

Alternative Two is appropriate if the Commission determines that this research is not in line with its priorities for Quad IV of Focus and should not be pursued at this time.

Alternative One: Focus shall investigate opportunities to integrate the time-varying value of energy efficiency and renewable energy resources into program operations.

Sub-Alternative A: The Focus Delegated Commissioner shall determine the appropriate source of funds for this research and analysis at a later date.

Sub-Alternative B: This research and analysis shall be funded from the Quad IV Focus Evaluation contract budget.

Sub-Alternative C: This research shall be funded from the Quad IV EERD budget.

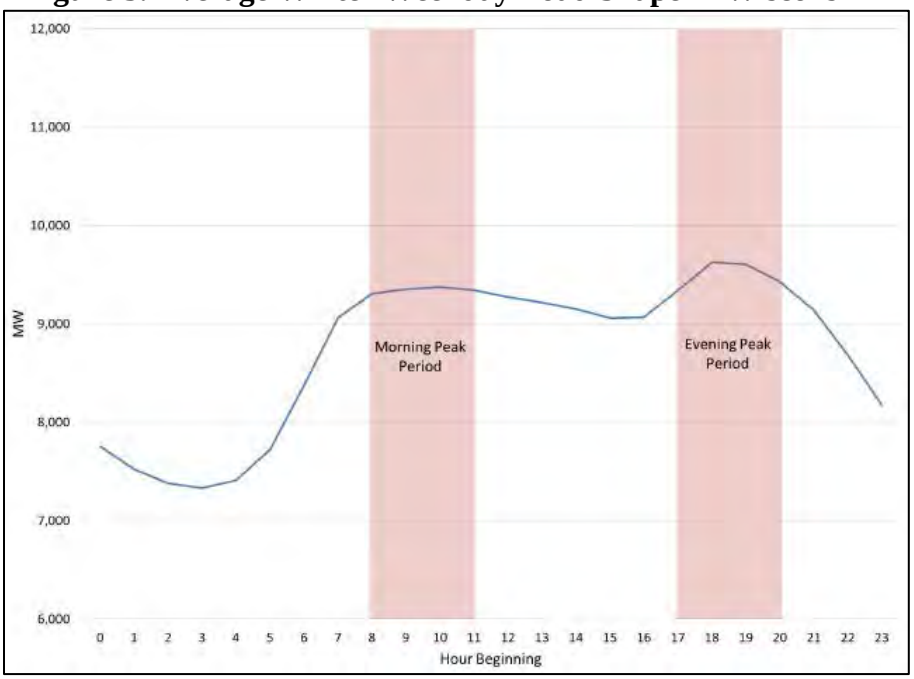
Alternative Two: Focus shall not investigate opportunities to integrate the time-varying value of energy efficiency and renewable energy resources into program operations at this time.

C. Winter Peak Electric Period Definition

The Commission may want to determine whether it is appropriate for Focus to adopt and begin measuring savings for a winter peak electric period. This option would be reasonable if the Commission determines it is appropriate for Focus to be better positioned to address winter electric capacity, reliability, and resiliency issues through its programs and offerings.

The peak period research performed by Cadmus in Quad III analyzed winter electric demand and considered the appropriate definition of a winter peak electric period to inform discussions on decarbonization and strategic electrification. This analysis shows that Wisconsin's average winter demand is substantially lower than the average demand in summer and the annual system maximum peak hour never occurred in the winter over the period analyzed (2015-2019). Cadmus found that two winter peak periods: 8:00 a.m. to noon on weekdays from December to February and 5:00 p.m. to 9:00 p.m. on weekdays from December to February, most appropriately represent winter system peaks in terms of these periods' performance in capturing the highest levels of winter demand.

Figure 3. Average Winter Weekday Load Shape in Wisconsin



Cadmus' peak period research illustrates that despite a lower relative magnitude of demand compared to the summer season, winter day-ahead LMP values were often comparable to LMPs observed during the summer peak period (see Figure 1 above). In fact, average energy prices in January mornings and evenings were found to exceed average energy prices in June.

Winter peaks are more likely to grow than diminish, particularly as heat pump adoption and other forms of electrification occur. In its Quad IV Phase I comments, Clean Wisconsin recommended Focus consider the value of winter peak savings, noting that progress toward electrification of the state's heating load is likely to increase the value of achieving demand reduction during peak winter demand periods. (PSC REF#: 434025.)

Adopting a winter peak period in Quad IV may inform future planning and goal setting for the program by allowing the Commission to consider setting separate kW reduction goals in different seasons. Focus EERD research performed in Quad III examined opportunities for Focus to help manage peak demand through energy efficiency measures. This study noted that

further research to identify and prioritize measures that reduce peak winter demand would help to position Focus to coordinate with its utility partners to address potential winter peak capacity constraints.[14]

A recent Midcontinent Independent System Operator (MISO) proposal filed with the Federal Energy Regulatory Commission (FERC) points to anticipated resource adequacy and reliability challenges in the region outside the summer peak period.[15] MISO has proposed to begin using a seasonal capacity framework that would establish separate reserve margin requirements for each season. This proposal is under review at FERC and further action is expected later in 2022. If FERC were to approve the proposal as written, seasonal resource adequacy reporting and assessment could begin in 2024.

Adopting a winter peak electric period would require various steps for integration into the program. These tasks are similar to those that would be necessary to support a greater emphasis on demand reduction in general. An initial list of requirements would include:

- A review of existing measures to determine which are likely to coincide with the peak periods,
- Analyzing and defining an appropriate peak period definition,
- Development of measure-specific coincidence factors for each peak period,
- Updates to the SPECTRUM database to enable tracking of multiple demand reduction variables,
- Incorporation into program evaluation activities,

[14] Illume Advising, LLC. (2021*). Load Shaping Research: Case Studies* FINAL. Prepared for Focus on Energy. Access from: https://www.focusonenergy.com/sites/default/files/inline-files/Focus_Loadshaping_Report_Final_2021_01_15.pdf.

[15] https://elibrary.ferc.gov/eLibrary/docketsheet?docket_number=er22-495&sub_docket=000&dt_from=1960-01-01&dt_to=2022-01-17&chklegadata=false&pagenm=dsearch&date_range=custom&search_type=docket&date_type=filed_date&sub_docket_q=allsub.

- Establishing approaches for accounting for avoided costs and any other benefits consistent with the Commission's decisions on Focus' cost-effectiveness framework, and
- Integration into program planning and goal setting.

Should the Commission want to adopt a winter peak period and begin quantifying and tracking these savings in Quad IV, a substantial portion of these costs are likely to be reflected in the Quad IV evaluation contract budget. There would be administrative costs on the part of the Program Administrator, Program Implementers, and Commission staff as well. For example, in discussions with APTIM, they note that a review of the SPECTRUM database is needed to ensure it can accommodate tracking of multiple demand periods. Thus, a Commission decision to integrate multiple demand periods may require building out the capabilities of SPECTRUM.

Commission Alternatives – Winter Electric Peak Period Definition

Decision alternatives in this section seek to understand the Commission's interest in quantifying the program's impact on winter electric peak demand. Measuring, tracking, and verifying winter electric peak demand would be a new endeavor for Focus and integrating these savings into the program would require modest evaluation and administrative resources. Alternative One may be appropriate if the Commission believes that winter electric peak demand will become more important in the future and Focus should begin integration of those savings in Quad IV by performing actions such as those listed earlier in this section.

Alternative Two may be appropriate if the Commission does not see an immediate need to integrate winter electric peak demand savings quantification and tracking into the program. This alternative may also be reasonable if the Commission wants to monitor activities pertaining to MISO's proposal to FERC to establish seasonal resource adequacy reporting and assessment

criteria prior to making a decision on Focus investing resources into quantifying and tracking winter peak electric demand savings

Alternative One: Focus shall adopt a winter electric peak period definition and begin quantifying and tracking winter peak demand savings in Quad IV. The EWG shall determine the appropriate winter peak period definition.

Alternative Two: Focus should not adopt a winter electric peak period definition at this time.

D. Peak Natural Gas

The Commission may want to determine whether it is appropriate for Focus to adopt and begin measuring savings for a winter peak natural gas period. Similar to the discussion of a winter peak electric period above, devoting program resources toward quantifying and tracking these savings would be reasonable if the Commission determines it is appropriate for Focus to be better positioned to address winter natural gas capacity, reliability, and resiliency issues through its programs and offerings.

A recent application from Wisconsin Electric Power Company and Wisconsin Gas LLC to construct new liquefied natural gas facilities and associated pipelines (docket 5-CG-106) provides one example where Wisconsin utilities have identified an immediate need for additional winter peak natural gas capacity to serve long-term gas demand and supply requirements and short-duration winter peak demands. (PSC REF#: 385669 at 35.) The Commission's own comments in this docket noted the need for an improved understanding of technically feasible and cost-effective natural gas savings on peak days that could be used to appropriately evaluate demand-side alternatives against supply-side options to meet capacity and reliability needs. (PSC REF#: 427782 at 22.) The Commission indicated it would like to see future applicants

seeking to obtain a CA model energy efficiency and demand response as an actual resource against alternatives in the future.

Focus' research to investigate an appropriate winter peak natural gas period has not been performed, and Focus has never attempted to quantify or track peak natural gas savings. Cadmus has performed a preliminary review of the technical considerations for Focus to begin tracking peak gas savings. Based on its initial review, Cadmus notes that quantifying peak gas savings would be a relatively modest effort that could leverage secondary research. For example, other states have incorporated peak natural gas coincidence factors into their program TRMs. Commission staff testimony in docket 5-CG-106 identified the Iowa TRM as one such example. (PSC REF#: 417459 at 4.) Focus could review source data from TRMs in other states and reference coincidence factors where appropriate.

The biggest technical challenge in integrating peak natural gas savings into program operations is likely to be in appropriately accounting for the benefits of peak gas savings. In particular, accounting for the avoided capacity and supply costs of reducing natural gas consumption at peak. The most significant contribution to peak gas avoided costs are likely to be avoided distribution capital additions. The avoided costs of distributing the gas consists of upgrades to the distribution system, which are highly dependent on the current capacity in specific geographic areas. Consequently, these values are likely to vary substantially by utility. Thus, while statewide estimates of peak gas savings and avoided costs could be employed, without utility-specific information and data (e.g., forecasted load and capital expansion plans) results would not be directly applicable to the constraints and considerations of any individual utility territory within the state. Developing accurate avoided costs would require an analysis of the current capacity of each of the natural gas distribution system areas, and utility data would be

critical to this process. Distribution-related avoided costs would then apply to Focus savings that occurred in those areas nearing capacity.

Through Cadmus' initial research, staff are aware of only one state currently estimating the value of avoided natural gas capacity in energy efficiency and renewable energy program cost-effectiveness testing. The Energy Trust of Oregon (Energy Trust), a statewide energy efficiency and renewable energy program in Oregon, tracks and reports estimates of net natural gas system efficiency peak demand reduction in its annual reports to the Oregon Public Utilities Commission (PUC) and the Energy Trust Board of Directors. In 2019, Energy Trust began a pilot effort to determine a value per peak therm that could be used to compare energy efficiency against other supply side resources.[16]

A key contrast between the statewide program structure in Oregon and Wisconsin is that in Oregon utility energy efficiency savings goals are determined through IRPs. Energy Trust helps utilities meet goals determined through IRPs. As part of the IRP process, Oregon utilities develop avoided cost inputs and submit them to an Oregon PUC docket for review. Energy Trust then blends the values shared by utilities to derive inputs used for measuring cost-effectiveness of measures and programs.[17] Energy Trust is actively working with utilities to incorporate the supply and distribution capacity values associated with peak gas savings into program cost-effectiveness testing.

In Wisconsin, it has been the practice that the Commission, with guidance from the EWG, establishes methodologies to estimate avoided costs for the purposes of evaluating the

[16] Energy Trust of Oregon. (2020). *2019 Annual Report to the Oregon Public Utility Commission & Energy Trust Board of Directors.* Accessed from: https://www.energytrust.org/wp-content/uploads/2020/04/2019.Energy-Trust-Annual-Report.pdf.
[17] Energy Trust of Oregon. May 12, 2017. *Natural Gas Avoided Cost Meeting*. Presentation. Accessed from: https://energytrust.org/documents/presentation-natural-gas-avoided-cost/.

cost-effectiveness of Focus. Whereas the statewide program in Oregon is a "taker" of avoided cost inputs from utilities, Focus has historically been the "maker" of these inputs for purposes of measuring portfolio cost-effectiveness. This arrangement is particularly notable for estimating avoided peak natural gas costs because, as described above, inputs are likely to be highly utility-specific and utility data necessary to develop accurate estimates not publicly available. Cadmus' review of Oregon values shows a wide range for natural gas avoided supply capacity costs reported by utilities; between $0.07 and $48.05/therm/year. The values used in Oregon (average of three utilities in the region) could serve as a proxy for Wisconsin if Wisconsin utility growth and capital cost information were not available. However, there would be significant uncertainty with respect to the appropriateness of applying values from another state to Wisconsin. Relying on detailed data from Wisconsin utilities would be a more robust approach to accurately evaluate the value of peak natural gas savings measures.

Commission Alternatives – Peak Natural Gas

Decision alternatives in this section seek to understand the Commission's interest in quantifying the program's impact on winter natural gas peak demand. Similar to efforts to adopt a winter electric peak demand period, measuring, tracking, and verifying winter natural gas peak demand would be a new endeavor for Focus and integrating these savings into the program would require evaluation and administrative resources. Alternative One may be appropriate if the Commission believes that winter natural gas peak demand will become more important in the future and Focus should begin integration of those savings in Quad IV by performing actions such as those listed earlier in this section.

Sub-alternatives under Alternative One seek the Commission's direction on the approach to quantifying the system benefits achieved by reducing natural gas peak demand with energy

efficiency. The discussion in this section highlighted anticipated challenges in quantifying the avoided costs associated with reducing peak natural gas demand for the statewide program. Sub-Alternative A may be reasonable if the Commission prefers to direct program evaluation resources toward further investigating options for estimating these benefits and present these options to the Commission for consideration. Sub-Alternative B may be appropriate if the Commission prefers that utilities provide the inputs necessary to support quantification of these benefits. Using utility inputs would likely require Focus to apply assumptions to blend values from multiple utilities to derive a statewide avoided cost value. The Commission may determine it is reasonable to not select either of the sub-alternatives to accompany a decision in favor of Alternative One. In this case, Focus would begin quantifying and tracking these savings in Quad IV, but the full avoided cost benefits associated with these savings would not be estimated and factored into portfolio cost-effectiveness. Choice of neither sub-alternative may also be appropriate if the Commission prefers for Focus to begin the process of integrating winter natural gas peak demand savings in Quad IV but wait for foundational work to occur before making decisions with respect to quantifying the avoided cost benefits of these savings.

Alternative Two may be appropriate if the Commission does not see a need to integrate winter natural gas peak demand savings quantification and tracking into the program at this time.

Alternative One: Focus shall adopt a winter natural gas peak period definition and begin quantifying and tracking winter natural gas peak demand savings in Quad IV. The EWG shall determine the appropriate winter natural gas peak period definition used to quantify natural gas peak demand savings.

Sub-Alternative A: The EWG shall investigate and develop recommendations for estimating peak natural gas avoided costs for the Commission's consideration, which in the absence of utility data may be a proxy using another state's methods.

Sub-Alternative B: Investor-Owned Utilities shall coordinate with Commission staff and the Focus Evaluator to submit natural gas avoided supply capacity costs for the Commission's review in support of evaluating cost-effectiveness of Focus programs and offerings. Utilities shall submit natural gas avoided supply capacity costs for the Commission's review in docket 5-FE-104. The Commission directs staff to work with utilities to obtain this data during Quad IV.

Alternative Two: Focus shall not adopt a winter natural gas peak period definition and begin quantifying and tracking winter natural gas peak demand savings in Quad IV.

E. Emphasis between Business and Residential Programs

Background

Wisconsin Stat. §196.374 (5m)(a) states that, "The commission shall ensure that, on an annual basis, each customer class of an energy utility has the opportunity to receive grants and benefits under energy efficiency programs in an amount equal to the amount that is recovered from the customer class."

Beginning in Quad II, the Commission determined that the Focus program should allocate approximately 60 percent of its budget to business customer classes and approximately 40 percent to residential customers. (PSC REF#: 215245.) This funding allocation is consistent with the historical proportion of funding collected from each type of customer and with expenditures for each sector. Therefore, the Commission found it reasonable to continue to allocate funding approximately proportional to the way in which the Focus funds are collected,

recognizing: (1) the proportion of funding coming from each class might change relative to another, and (2) it is difficult to allocate and spend in the exact proportion of funds collected in any one area and that a margin of error should be built in.

The *Focus on Energy 2017 Energy Efficiency Potential Study* assessed future energy savings potential for the residential and business sectors and found savings potential generally consistent with existing allocations.[18] Therefore, in its Final Decision in 2018 for the third quadrennial plan, the Commission affirmed that it was reasonable to continue to allocate funding in those proportions, recognizing that the allocations may remain only approximate to those proportions due to the difficulty in allocating and spending in the exact proportion of funds. (PSC REF#: 343909.)

For the 2022 Focus Core and Renewable budget, this translates to $50 million for Business Programs and $34 million for Residential Programs. While this reflects what customers pay in, the remaining question is how this aligns with savings opportunities between classes.

Current Budget Allocation Process

At the beginning of each program year, the Program Administrator sets portfolio budgets for Business at 60 percent and Residential at 40 percent. As Table 4 below indicates however, this may change slightly over the course of the program year based on program demand. Using implementer forecasts, the Program Administrator assesses budget balances and program demand going into the last quarter, and makes adjustments as needed. Programs that have high demand can receive additional funds from programs that are forecasting a surplus budget at the end of the year. As Table 4 also indicates, verified gross energy savings, kW reductions and therm savings do not always mirror the expenditure percentages. For example, in 2020, residential

[18] *"Focus on Energy 2016 Energy Efficiency Potential Study*, June 30, 2017.

expenditures were at 42 percent of total expenditures, which closely mirrored its kWh savings at 39 percent, and kW was relatively close at 35 percent. However, residential therm savings accounted for only 18 percent of total therm savings. While for business programs in 2020, total expenditures were at 58 percent of the total with kWh and kW savings tracking slightly higher. But therm savings were a much larger percentage at 82 percent. This pattern is typical across program years. Historically, business programs have brought in a larger percentage of savings due to economies of scale with larger projects, particularly on the therm side. Despite the disparities in savings by sector, the residential sector is still cost effective as shown in Table 4.

Table 4: Business and Residential Expenditures and Verified Gross Energy Savings 2017 - 2020*

	% of Total Expenditures	% of Total kWh	% of Total kW	% of Total Therms	B/C Ratio
2017 Business	**60**	**62**	**68**	**72**	**4.60**
2017 Residential	**40**	**38**	**32**	**28**	**3.13**
2018 Business	**61**	**61**	**66**	**82**	**4.95**
2018 Residential	**39**	**39**	**34**	**18**	**2.37**
2019 Business	**62**	**65**	**67**	**85**	**3.01**
2019 Residential	**38**	**35**	**33**	**15**	**1.70**
2020 Business	**58**	**61**	**65**	**82**	**2.78**
2020 Residential	**42**	**39**	**35**	**18**	**1.70**

***Includes Core Efficiency and Renewables expenditures and savings

2021 Potential Study

The *2021 EE Potential Study*, concluded that there is enough cost-effective and achievable savings potential to maintain the 60 percent Business and 40 percent Residential split.[19] However, the Residential electric savings achieved with 40 percent of the total budget are projected to decline compared to previous years' savings achievements shown in Table 4 above. For example, the *2021 EE Potential Study* found that future Residential savings are more

[19] PSC REF#: 420467

likely to represent approximately 26% of the achievable electric savings over the next four years. This is due to higher cost of acquisition for residential savings compared to nonresidential sectors, which is to be expected.

The *2021 EE Potential Study* modeling showed that residential savings potential was highly responsive to program funding assumptions. That is to say, current funding levels are not sufficient to capture a proportionate amount of cost-effective residential savings compared to nonresidential sectors. This finding was particularly pronounced for residential natural gas savings potential. Therefore, based on the *2021 EE Potential Study* modeling, an increase in Focus' residential portfolio budget allocation is more likely to result in a proportionally greater increase in sectoral savings compared to an adjustment to increase Focus' business sector budget allocation.

Commission Alternatives – Emphasis between Business and Residential Programs

Commission staff developed two options for Commission consideration. Alternative One retains the current split where 60 percent of Focus budgets are allocated to business programs and 40 percent from residential programs. This allocation reflects the proportion of Focus funds currently collected from each customer group. This alternative is generally consistent with the *2021 EE Potential Study* which concluded that there is enough cost-effective potential to maintain the 60 percent Business and 40 percent Residential split.

A different budget allocation may be appropriate if the Commission identifies policy priorities that merit greater emphasis on either business or residential programs. For example, the Commission can consider whether its future approach to serve underserved customers or its priorities for renewable energy involve funding allocations between customer classes that significantly differ from current offerings. Any shift would need to be balanced with the equity

requirements of Wis. Stat. §196.374 (5m)(a) which states that "each customer class of an energy utility has the opportunity to receive grants and benefits under the energy efficiency programs in an amount equal to the amount that is recovered from the customer class."

It should be noted that a different budget allocation would have to be addressed in future rate cases so that the new proportion is accurately collected from the business and residential rate classes. There would need to be additional work on the part of Commission staff and utilities to incorporate the new allocations. As for ratepayers, the impact would depend on the new allocation. For example, a shift to 70 percent business and 30 percent residential would require more dollars to be collected from business customers. Since Large Energy Customers' contributions are capped, that would mean additional funds would have to be collected from medium and small business customers.

Alternative One: Status Quo. Allocate 60 percent of Focus funding to business program ratepayers and 40 percent to residential program ratepayers.

Alternative Two: Choose a different formula for allocating Focus funding to business and residential programs based on revised priorities.

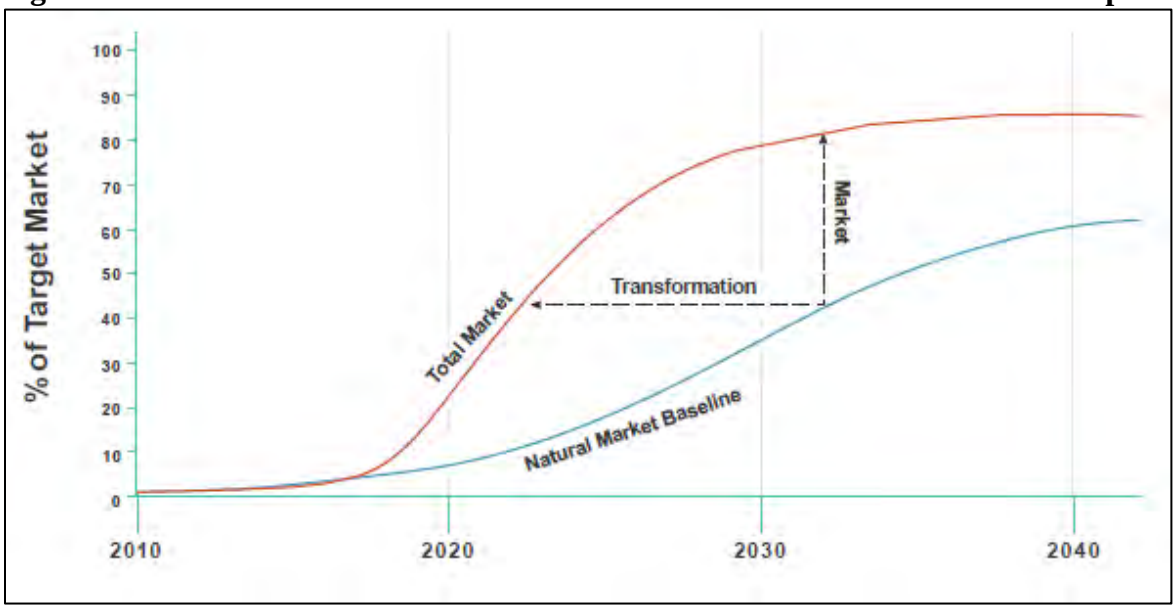
F. Resource Acquisition and Market Transformation.

Background

Historically, energy efficiency programs have been separated into two distinct categories based on their primary purpose: resource acquisition and market transformation. In general, the primary purpose of a resource acquisition program is to achieve near-term energy savings at the lowest cost possible. Market transformation, on the other hand, is a program approach and strategy that looks beyond simply achieving low-cost, immediately measurable savings, and instead toward intervention in markets to bring about long-term and systemic changes in the products, services, and practices impacting energy saving technologies and behaviors. Typically,

market transformation initiatives seek to accelerate the adoption of certain energy saving technologies, to increase the overall market adoption potential for these technologies, or both. The Illinois TRM offers an illustration of this concept in Figure 4 below.

Figure 4. Market Transformation vs. Natural Market Baseline Framework Comparison[20]



Over time, as energy efficiency programs focused on resource acquisition have matured and evolved, much of the low-hanging fruit has been picked and sustained opportunities for cost-effective savings have diminished. As a result, some programs are exploring opportunities for developing or expanding market transformation initiatives to increase adoption of emerging technologies or to influence certain energy saving practices and behaviors.

The diminished opportunity for cost-effective LED lighting savings is playing a prominent role for programs considering the balance of market transformation initiatives within their portfolios going forward. Many states and utilities have been offering different iterations of lighting programs for well over a decade. For Focus in particular, the program has offered a

[20] 2020 Illinois Statewide Technical Reference Manual for Energy Efficiency Version 8.0: Attachment C: Framework for Counting Market Transformation Savings in Illinois: August 23, 2019. Accessed from: https://ilsag.s3.amazonaws.com/MT_Savings_Paper_Final_08-23-2019.pdf.

retail lighting program since 2013 with seasonal and mail-in rebate programs prior to that.[21] While these programs have been designed for resource acquisition, market analysis performed by the Focus evaluation team shows that Focus' efforts promoting adoption of energy efficient lighting have contributed to measurable market transformation over time.

In its most recent analysis of the retail lighting market nationwide, the Focus Evaluator found that Wisconsin's LED market share is 87 percent. Only two states included in the Evaluator's modeling (California and Nevada) have higher LED market shares than Wisconsin. Both states with higher market shares have proactively enacted statewide policy enforcing compliance with the Energy Independence and Security Act (EISA) prior to the DOE's final ruling adopting and enforcing the efficiency standards of that law.

The Evaluator's analysis provides evidence that Focus' longstanding work to incentivize adoption of efficient lighting has contributed to a long-term and sustainable transformation of the retail lighting market in Wisconsin. In that sense, Focus' retail lighting initiatives offer an example of a resource acquisition program achieving market transformation outcomes.

[21] A "retail program" is defined differently depending on who you talk to. Some consider the earlier downstream/mail in rebate offering for CFLs to be a retail program because customers were buying lights at retail. But others only consider the upstream program design to be a retail program since the relationship is with the retailers.

Figure 5. Wisconsin and Total U.S. Year-Over-Year LED Market Share

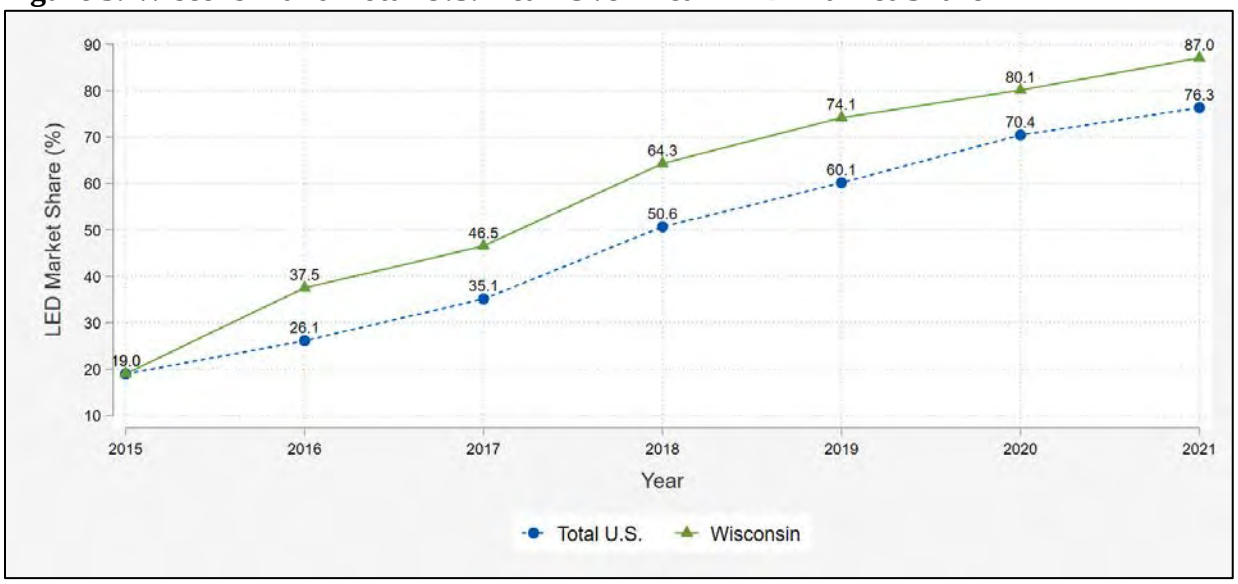
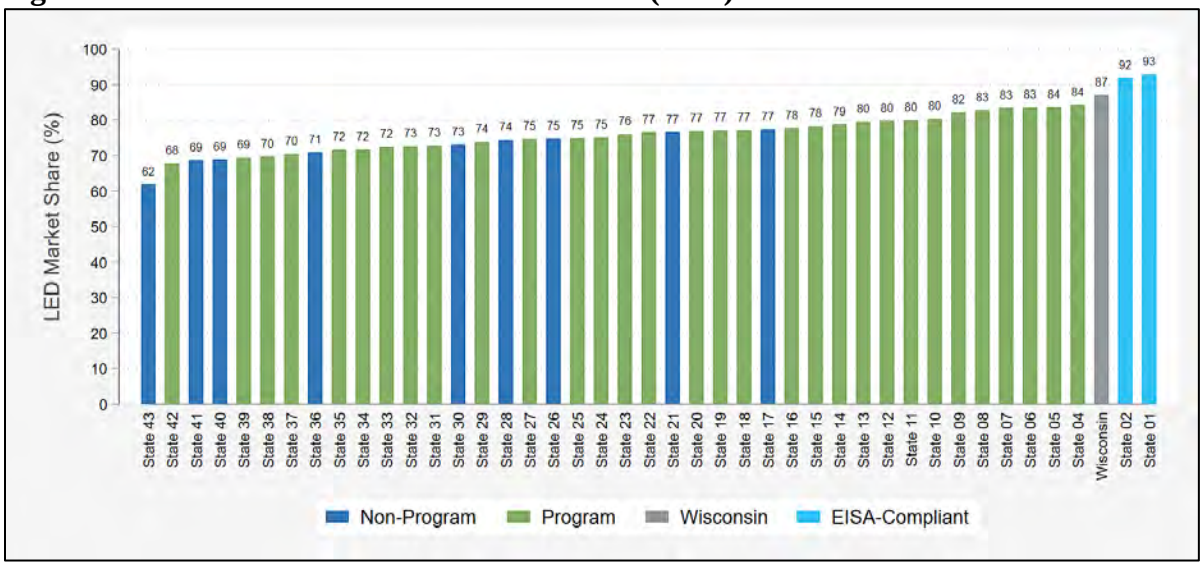


Figure 6. LED Sales Distribution Across States (2021)



Note: Blue bars indicate states without retail lighting programs. Green bars indicate states with retail lighting programs.

Focus' Residential New Construction Solution offers another example where there is evidence of the program influencing a broader market to become more energy efficient. Research performed by the Program Evaluator in Quad III shows that the energy efficiency characteristics (e.g., insulation, HVAC equipment) of new single-family homes built in Wisconsin that are certified through Focus' Residential New Construction Solution (program

homes) are similar to the characteristics of new single-family homes that have not been certified by the program (non-program homes). That is to say, there is evidence that both program homes and non-program homes are being built to energy efficiency standards above and beyond the requirements of Wisconsin's Uniform Dwelling Code.[22]

The Program Evaluator's research and analysis of residential new construction during Quad III has included a billing analysis of program and non-program homes, interviews with new home construction and Program market actors, convening a Delphi panel of market experts, and performing an updated new homes baseline study. These efforts have converged to support the evaluation team's theory that Focus' efforts in the new homes markets have measurably influenced the market over time and home builders in Wisconsin are building homes to higher efficiency standards than they otherwise would in absence of Focus offerings.[23]

Current Programs Targeting Market Transformation

Focus' Midstream Solution, which began as a pilot initiative late in Quad II and has since grown into its own solution within the portfolio, is an effort that blends the resource acquisition and market transformation frameworks. Under the Midstream Solution, the Program Implementer, ICF, offers incentives to distributors to influence their stocking, promotional, and pricing practices for certain energy saving devices they sell. Efforts to influence distributor stocking and promotion of certain energy saving technologies can be particularly impactful for products like water heaters or HVAC equipment since often customers do not consider these purchases until their existing units fail. Market intervention strategies to encourage distributors

[22] https://dsps.wi.gov/Pages/Programs/UDC/Default.aspx
[23] See the Residential New Construction Solution Chapter of the *Focus on Energy Calendar Year 2020 Evaluation Report, Volume II Program Evaluations* for additional details. https://focusonenergy.com/sites/default/files/inline-files/Evaluation_Report-2020-Volume_II.pdf.

to stock high efficiency equipment and contractors to promote the energy saving benefits of these technologies can improve the likelihood of end user adoption of energy efficient models.

Equipment incentivized through the Midstream Solution is tracked in the Focus database and savings for these units are claimed by the program. In addition, program, staff have collaborated throughout the quadrennium to arrive at an approach to evaluating the Midstream Solution's impacts on the markets it is seeking to transform. This process has revealed certain challenges in quantifying these impacts that are not similarly encountered in evaluating resource acquisition programs.

The Program Evaluator's experience in quantifying market effects of existing resource acquisition programs and in measuring the market impacts of the Midstream Solution thus far demonstrates that evaluation plans must consider the unique design, delivery, and anticipated outcomes of each initiative and target technology. Each product market is unique and requires careful consideration in defining key market actors and identifying the data needed to measure program attribution. Certain market data (e.g., sales data) can be difficult or expensive to acquire and must be updated and reviewed over time. Evaluation of market transformation initiatives also requires assessing impacts from multiple perspectives of relevant market actors that the program is seeking to influence. It can take multiple years for market transformation efforts to demonstrate measurable impacts. Thus, programs emphasizing market transformation require long-term planning and commitments (e.g., 10 to 20 year timeframes). For example, since 2008, the Northwest Energy Efficiency Alliance (NEEA)[24] has been working to transform

[24] The nonprofit Northwest Energy Efficiency Alliance (NEEA), was created in 1996, when six Northwest investor-owned utilities joined forces with the publicly owned utilities represented by the Bonneville Power Administration and called for the creation of a regional organization committed to encouraging local markets to favor energy-efficient products and services. NEEA's first Board of Directors represented all primary stakeholders across Oregon,

the market for efficient heat pump water heaters (HPWHs). The overarching goal of this initiative is to create a federal efficiency standard for electric water heaters greater than 45 gallons. HPWHs are a highly efficient technology that has been available and widely used around the world for almost 30 years but has yet to gain major traction in the U.S. market. Though today's models are twice as efficient as standard electric water heaters, HPWHs have faced market barriers common for efficient products – higher up-front costs, low awareness among customers and installers, and no product specification to guide manufacturers.

Focus' level of investment in market transformation activities in Quad III has decreased compared to its spending on these activities in Quad II. During 2018, the final year of Quad II, Focus budgeted $2,484,000 on market transformation activities that included participation in the ENERGY STAR Retail Products Platform (RPP)[25] and small-scale midstream pilots. (PSC REF#: 339941 at 15.) Focus no longer participates in RPP and has allocated those funds for residential program delivery and incentives. Focus' budget for its Midstream Solution has steadily increased over the course of Quad III as that effort has matured. The 2022 budget for the Midstream Solution is $2,224,000. Program Administrator staff project the Midstream Solution to be one of the few programs forecasted to exceed its budget by the end of the year.

Program Considerations – Balance between Resource Acquisition and Market Transformation

Wisconsin Admin. Code § PSC 137.05(5) states that the statewide program "shall include initiatives and strategies that address the needs of individuals and businesses facing the most significant barriers, as determined by the commission, to creating or participating in markets for

Idaho, Montana and Washington, including regulators, public and privately-owned utilities, energy efficiency businesses and government representatives.

[25] https://www.energystar.gov/partner_resources/energy_star_retail_products_platform.

energy efficiency and renewable resource products and services." Wis. Admin. Code § PSC 137.05(11) lists among the statewide program's priorities, implementing programs that "facilitate energy efficiency and renewable resource market development". Market transformation strategies, by design, seek to overcome barriers to adoption for targeted markets in support of increased market shares of energy efficiency and renewable resources products and services.

Energy efficiency programs designed for resource acquisition are well established in reliably delivering measurable energy savings at low cost. Measurement and verification of these savings is also a mature practice supported through detailed accounting of savings assumptions and algorithms documented in TRMs throughout the country. Studies of energy efficiency savings potential use models that estimate the savings potential for individual measures or groups of measures over time following assumed adoption curves (i.e., ramp rates). Such studies do not typically account for the potential market transformation impacts of a program into this modeling. Markets can be unpredictable due to externalities outside of the program's control and setting assumptions to account for this uncertainty is difficult.

Measuring the success of market transformation initiatives often requires analyzing both the program's immediate impacts (e.g., savings from units incentivized) as well as its impacts on the broader market over time. It can take multiple years for quantifiable evidence of the program's impact on the market to be independently verified, making setting goals and other performance milestones for these initiatives challenging. Greater emphasis on market intervention would mean less funding available to achieve energy savings in the near-term which has implications for the program's resource acquisition savings targets. A greater emphasis on market transformation is likely to result in fewer incentives given directly to customers as the program would need to allocate funds to incentivize various supply chain actors including

retailers, contractors, distributors, and manufacturers to stock and promote targeted qualifying equipment. Research performed by Cadmus in Quad III lays out practical steps the program could take to incrementally advance Focus' emphasis on market transformation:

1. Identify opportunities to adapt the design of existing Focus solutions and offerings to achieve long-term market impacts.

2. Develop logic models to describe program theory, activities, outputs, and intended short- and long-term outcomes to provide the basis upon which the evaluator can assess market progress and the impact of each initiative.

3. Use stakeholder collaboration to determine market performance indicators that can be tracked over time.

4. Develop data collection plans for each of the market performance indicators.

5. Implement data collection plans and report findings at least annually.

The program has engaged in some of these steps already with the Midstream Solution. However, work remains to be done in determining market performance indicators and developing and implementing data collection plans for targeted energy efficient technologies.

Moving beyond an incremental increase in emphasis on market transformation and toward an enhanced emphasis on market transformation initiatives may require investment of resources beyond the levels dedicated in past quadrennial periods. Performing research and analysis to help the Commission and program stakeholders better understand the overall market transformation potential of the program and inform decision making may provide value in identifying forward-looking opportunities for Focus. This may include: expanding the assessment of markets beyond existing program solutions and offerings to identify emerging markets appropriate for program intervention; considering opportunities for workforce training and education; determining appropriate short-term, mid-term, and long-term goals and measurable targets; and establishing baselines against which to measure program achievements.

Performing this type of foundational market transformation research and analysis could serve a similar purpose as Focus' energy efficiency potential studies whose objectives have been to inform program planning and goal setting for a program emphasizing resource acquisition.

Wisconsin Admin. Code § PSC 137.05(7) states that the statewide program "shall initiate and fund market research projects that support and enhance the effective delivery of statewide programs" and these projects shall be coordinated with the Commission and the program's independent third-party evaluator. A forward-looking assessment of Focus' market transformation potential could be one mechanism to serve that policy requirement for Focus and inform future planning and decision making related to the program's balance between resource acquisition and market transformation. At a minimum, this assessment could identify which markets Focus is most suited to transform, the intended impacts of its market intervention activities, the data required to evaluate the impacts and performance of these efforts, and the budgets necessary to support them.

The Commission may also consider establishing quantifiable goals for the Program Administrator to encourage a greater programmatic emphasis on market transformation in Quad IV. The Commission's decisions in the Quad II and Quad III Planning Processes to set qualitative targets for long-term market effects have been challenging to establish, have not yielded concrete outcomes, and have offered little incentive for specific program action. As discussed earlier in this section, Focus continues to make progress in influencing long-term market changes for certain technologies and practices, though the bulk of the measurable impacts have been identified through backward looking analysis of longstanding resource acquisition program initiatives.

Heat pump technologies were discussed at length in the Phase I staff memorandum as a measure promoted by certain energy efficiency programs and statewide policies seeking to save energy and support the clean energy transition. The Phase I staff memorandum also described some of the adoption barriers for heat pumps in Wisconsin. Recently, the Commission awarded an Energy Innovation Grant Program (EIGP) grant to Slipstream to conduct a statewide heat pump market transformation plan. (PSC REF#: 428997.) Among this study's objectives is to provide its primary stakeholders, which includes Focus and its partner utilities, with a playbook to guide strategic actions and interventions needed to accelerate heat pump adoption to capture energy savings. (*Id*. at 6.) This study is scheduled to be complete during the first year of Quad IV.

Heat pumps are among the most prominent technologies suitable for market transformation and may be an appropriate technology when it comes to establishing quantifiable performance metrics for Focus in Quad IV to support the program's efforts to transform this market. As such, the Commission may want to consider setting a unit adoption goal for heat pumps in Quad IV. Setting a unit adoption goal would incentivize the Program Administrator to accelerate the adoption of heat pumps in Wisconsin and would encourage Focus to make meaningful connections to the statewide heat pump market transformation study funded by EIGP and translate that study's stakeholder playbook into actionable program operations.

Focus has not set unit adoption goals historically. Quad IV could serve as a test case for a quantifiable performance metric in support of a greater emphasis on heat pump market transformation. Future program planning could build off of this approach to modify or refine the types of quantifiable performance metrics that could be applied to other energy saving

technologies or program initiatives where the amount of energy savings achieved is not the only measure of program success.

Stakeholder Comments – Balance between Resource Acquisition and Market Transformation

Several stakeholders provided comments in the scoping phase and Phase I macro-policy stage of Quad IV Planning to offer input on Focus' balance between resource acquisition and market transformation. The WUA's comments in the Quad IV scoping phase stated that resource acquisition programs are more appropriate in jurisdictions with centralized planning processes (i.e., utility integrated resource planning) and market transformation programs are better suited for the statewide energy efficiency model since this model has the ability to focus on structural market changes that transcend utility territory boundaries. (PSC REF#: 426016.) VEIC's comments during Quad IV scoping phase similarly acknowledge that statewide programs are well suited to assume a role in market transformation. (PSC REF#: 426094.)

Rocky Mountain Institute's (RMI) and Slipstream's Phase I comments both recommended that Focus build off its past experience in advancing the market for space heating using gas appliances to be a "market energizer" and reduce adoption barriers for heat pumps. (PSC REF#: 434014 and PSC REF#: 434110.)

The ICG's Phase I comments urged the Commission to continue to emphasize resource acquisition while maintaining qualitative targets for market transformation. (PSC REF#: 434182.)

Commission Alternatives – Balance between Resource Acquisition and Market Transformation

The decision alternatives below seek the Commission's direction on how it wants Focus to balance resource acquisition and market transformation initiatives in Quad IV. Alternative

One would be consistent with the Commission's decisions in Quadrennial Planning Processes II and III. With a choice of Alternative One, Focus would maintain a program delivery approach emphasizing resource acquisition and continue to identify and quantify, where practical, the long-term market effects its programs generate.

Alternative Two is appropriate if the Commission wants to maintain an emphasis on near-term savings but also finds it reasonable for Focus to increase its emphasis on market transformation in an incremental fashion by directing the Program Administrator to identify ways the portfolio can adapt to ensure they are achieving long-term market effects. With this direction, the Program Administrator, Program Implementers, and Program Evaluator would need to collaborate and adapt operations to support this priority. This may include, but is not limited to identifying existing programs and offerings that can be adapted to achieve long-term market impacts, developing theories of change to assess market progress and the impacts of each initiative, determining appropriate market performance indicators, developing data collection and evaluation plans for each market performance indicator, and reporting on measurable progress at least annually. Including updates on progress toward this direction in the annual program evaluation reports will ensure that the Commission and other program stakeholders are able to track the program's progress in support of this priority over the course of the quadrennium.

Alternative One: Status Quo. Focus goals should continue to emphasize near-term energy savings. The Program Administrator shall continue to prioritize program designs that simultaneously achieve near-term energy savings while targeting long-term market changes.

Alternative Two: Focus goals should continue to emphasize near-term energy savings, but the program should increase its emphasis on long-term market transformation by identifying the parts of its existing portfolio that can be adapted to achieve long-term market effects and

developing strategies to support this direction. The Focus Evaluator shall report on the program's progress in support of this direction in annual evaluation reports.

The Commission may want to select any or all of the sub-alternatives below to accompany the alternatives listed above. Alternatively, the Commission may decide to not select any of the sub-alternatives.

Sub-Alternative A would establish a unit adoption goal for heat pumps. This sub-alternative would be appropriate if the Commission wants Focus to further engage in transformation of the heat pump market in support of its Quad IV priorities. With a choice of Sub-Alternative A, Commission staff would propose heat pump adoption target options for the Commission's consideration in Phase III of the Quad IV Planning Process.

Sub-Alternative B would direct the Focus third-party evaluator, in coordination with Commission staff, and with input from the Program Administrator and stakeholders, to develop a market transformation potential assessment, to support future Commission decisions related to programmatic opportunities to enhance Focus' emphasis on market transformation. Development of a market transformation potential assessment would be appropriate if the Commission wants to see additional forward-looking research and analysis to support future decisions on how to balance Focus' emphasis between resource acquisition and market transformation. This assessment could compliment the Slipstream heat pump market transformation plan approved by the Commission for EIGP funding but also look at market transformation opportunities for energy efficiency and renewable resource technologies beyond just heat pumps. With this work, Focus would seek to position itself to optimize the benefits of the market transformation initiatives it develops and improve the accountability and effectiveness of those programs.

Sub-Alternative A: Commission staff shall propose a unit-based heat pump adoption target in Phase III of Quadrennial Planning Process IV.

Sub-Alternative B: The Program Evaluator shall develop an assessment of the program's market transformation potential in coordination with Commission staff and with input from the Program Administrator and stakeholders. This assessment shall, at minimum, identify the existing and emerging markets and technologies best suited for program intervention, theories of change for select markets, potential short-term, mid-term, and long-term market outcomes, appropriate market performance indicators, data collection plan(s), evaluation plan(s), and budgets. This assessment shall be delivered to the Commission prior to scoping for Quadrennial Planning Process V.

G. Cost Effectiveness Decisions

Under Wis. Stat. § 196.374(2)(a)2., the purpose of Focus is "to help achieve environmentally sound and adequate energy supplies at reasonable cost." The definition of "reasonable cost" is further outlined in Wis. Admin. Code § PSC 137.05(12), which requires the Focus Program Administrator to "deliver energy efficiency and renewable programs that pass a portfolio level test of net cost-effectiveness, as determined by the commission."

The Commission has used prior Quadrennial Planning processes to review and, where appropriate, update its determination of a cost-effectiveness testing approach. Additionally, the Commission has made decisions within quadrennial periods to establish or clarify methodological approaches for calculating components of the program's cost-effectiveness tests.

The topics for decision alternatives presented in this section are consistent with past Quadrennial Planning processes. First, the Commission must determine which cost-effectiveness test is appropriate to serve as the program's primary test and which, if any, tests are to be

included in the evaluation of program performance for informational purposes (i.e., secondary cost-effectiveness tests). Next, the memorandum provides a review of three specific test inputs of which appropriate values can change over time in connection with evolving conditions or changes in the Commission's policy priorities. These inputs are: avoided costs, value of avoided carbon emissions, and the discount rate for future benefits.

Staff's analysis in this section draws upon the Commission's decisions in Phase I of the Quad IV Planning Process to note where the Commission needs to consider particular decisions from that phase of planning in order to achieve alignment of its priorities in its decisions in this phase of planning.

H. Primary and Secondary Cost-Effectiveness Tests

The cost-effectiveness of energy efficiency and renewable energy programs can be analyzed using a variety of different tests each with standard test frameworks that can be modified depending on the underlying program's goals and priorities. Different cost-effectiveness tests includes different combinations of benefits and costs and are designed to evaluate cost-effectiveness from a variety of perspectives. The choice of an appropriate cost-effectiveness test for an energy efficiency and renewable energy program should holistically consider the perspective the test is designed to capture and the underlying goal and priorities of the program. A jurisdiction's primary cost-effectiveness test is intended to address the fundamental question of whether or not an energy efficiency or renewable resource will have net benefits, and therefore whether the resource should be acquired. Secondary tests are typically included for informational purposes to aid in program planning and to understand program impacts from multiple perspectives.

Table 5 below identifies the benefits and costs included in common cost-effectiveness tests used by Focus and other programs in other states.

Table 5. Benefits and Costs Included in Cost-Effectiveness Tests

	Total Resource Cost (TRC)	Modified TRC	Expanded TRC	Societal (SCT)	Utility (UCT)	Participant (PCT)	Ratepayer Impact (RIM)
Benefits							
Utility Avoided Costs	X	X	X	X	X		X
Avoided Emissions		X	X	X			
Economic Benefits			X	X			
Non-Energy Benefits				X			
Incentive Payment						X	
Bill Savings						X	
Costs							
Program Admin. & Delivery	X	X	X	X	X		X
Incremental Costs to Participants	X	X	X	X		X	
Program Incentives Paid					X		X
Lost Utility Revenues							X
Test Currently Conducted by Focus?	Yes	Yes, Primary Test	Yes	Yes	Yes	No	Yes

The **TRC test** is the most commonly used test framework used by energy efficiency and renewable energy programs nationwide. Historically, the TRC has been preferred in part because it takes a general perspective on costs and benefits incurred within the state or utility territory served by the program. The benefits measured are the avoided costs to the utility that result from the program, including the costs the utility would have borne to provide customers with the same amount of electricity and natural gas saved, and to build the additional capacity needed to support the amount of kW-demand saved. The costs include spending on program administration and delivery (e.g., technical and customer support) and the incremental costs participants pay for purchasing the products and services offered by the program compared to their less efficient alternatives. The TRC does not include incentive costs because they represent both a benefit to the participant and a program cost and therefore offset one another.

Focus' primary cost-effectiveness test is a **Modified TRC test**. The Modified TRC test includes the avoided cost benefits of the TRC but, in the case of Focus, is modified to include the value of emissions (carbon dioxide, sulfur oxides, and nitrogen oxides) avoided through the program. Avoided emissions benefits have been included in Focus' primary cost-effectiveness test to reflect the fact that Wis. Stat. § 196.374(3)(b)1. states that the Commission's priorities for Focus programs should include "avoid[ing] adverse environmental impacts from the use of energy." As the program's primary cost-effectiveness test, the Program Administrator ensures the portfolio is cost-effective under the modified TRC, and the program evaluator calculates and reports the value of this test annually as Focus' public measure of cost-effectiveness. In 2021, Focus achieved a Modified TRC benefit-cost ratio of $2.35 to $1.00 ($2.35 in benefits for each $1.00 in costs).

In past quadrennial planning processes, the Commission has directed Focus to conduct, for informational purposes, an **Expanded TRC test** that adds to the Modified TRC the net economic benefits Focus achieves for the State of Wisconsin by increasing employment, business revenue, and consumer disposable income. Including net economic benefits is broadly consistent with statutorily established goals for Focus, which include enhancing manufacturing competitiveness and creating or retaining jobs for workers in that sector (Wis. Stat. § 196.374(2)(a)2.e.) and for the Commission to prioritize programs that supports "rural economic development" (Wis. Stat. § 196.374(3)(b)1.). The Program Evaluator conducts economic modeling and analysis every two years to calculate the net economic benefits generated by Focus programs. The most recent analysis, released in February 2022, concludes

that program activities during 2019-2020 will add almost $1 billion in economic benefits to the state through 2044.[26]

The **Societal Cost Test** (SCT) includes all the benefits and costs of the Expanded TRC, plus additional non-energy benefits achieved from program activities. Following the Commission's decision in Quadrennial Planning Process III, Focus began conducting the Societal Test as a secondary cost-effectiveness test. (PSC REF#: 343909.) The Focus Program Evaluator has developed methodologies to quantify the program's impacts under the following non-energy benefit categories: health benefits, water and wastewater bill savings, purchase deferrals for lighting measures, property value impacts, and reduced arrearages. Monetized health benefits attributable to reduced particulate emissions achieved through Focus activities are calculated using the U.S. Environmental Protection Agency's (EPA) benefits per kilowatt-hour (BPK) tool.[27] Excluding net economic benefits, which are also included in the Expanded TRC, health benefits are the largest source of non-energy benefits estimated under the Societal Test. Through the first three years of Quad III, health benefits attributable to Focus have totaled $245.8 million. If the Commission determines it is appropriate to set the Societal Test as Focus' primary cost-effectiveness test, further review of the non-energy benefits currently quantified and identification of other quantifiable non-energy benefits may be appropriate tasks for the Focus Evaluator and EWG in Quad IV.

The **Utility Cost Test** (UCT) measures only the benefits and costs from the perspective of the utility or program administrator. The UCT estimates the impacts on utility revenue requirements (the cost of providing service) by comparing the benefits of avoided utility costs

[26] Focus' economic impact are realized over a period of time as the investments make their way through the state's economy in the form of changes in direct spending by utilities and participants.
[27] For additional information on how Focus estimates health benefits see the Focus CY 2020 Evaluation Report Appendix H: https://focusonenergy.com/sites/default/files/inline-files/Evaluation_Report-2020-Volume_III.pdf.

from avoided energy consumption to the combined costs of operating the program (administration, technical and customer assistance, and financial incentives). A positive UCT benefit/cost ratio indicates that overall revenue requirements (revenue needed to operate the utility business and deliver energy services) decreased as a result of the program's offerings. Because the Modified TRC does not include incentive costs, the Commission has directed Focus to use the UCT for informational purposes to help ensure that incentives for each measure are set at appropriate and cost-effective levels. In addition, the Commission has approved the use of the UCT in assessing the cost-effectiveness of Northern States Power – Wisconsin's (NSPW) voluntary energy efficiency programs.

The **Participant Cost Test** (PCT) measures benefits and costs from the perspective of the individual or business participating in the program. The PCT accounts for benefits enjoyed by the participant in the form of monetary incentive to participate in the program and the resulting savings on participants' energy bills. Costs are measured as the incremental costs paid by participants for the energy saving equipment compared to a less efficient option. Currently, only two states, New Jersey and Virginia, use the PCT as their primary cost-effectiveness test and both states have multiple primary tests.

Finally, the **Ratepayer Impact** (RIM) Test measures the effects on utility rates by comparing avoided utility costs to the costs of both program spending and the lost revenues to utilities that result from reduced energy usage. In effect, this comparison takes the perspective of a ratepayer who does not participate in the program, who would experience increased rates as a cost. By contrast, participants in the program would see the rate increases offset by the reduced usage they achieved from program participation. Partly for this reason, programs nationwide almost never use the RIM Test as a primary cost-effectiveness test. However, the Commission

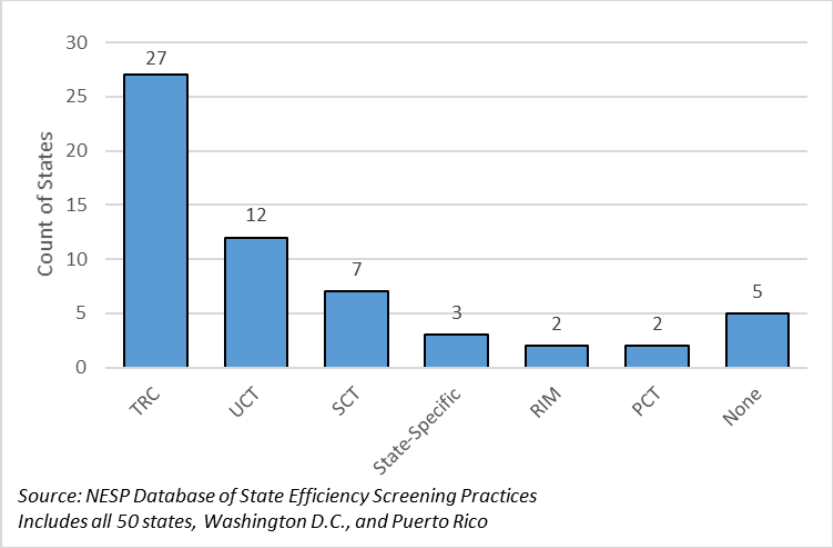
has directed Focus to conduct the RIM Test for informational purposes to provide a general overview of program effects on rates. The RIM test does not consider any societal or system benefits that accrue to all customers.

Comments from Clean Wisconsin in Quadrennial Planning Process III express opposition to applying the RIM Test for Focus, even as a secondary test for informational purposes. Clean Wisconsin's arguments in opposition to the RIM Test included: 1) inconsistency compared to how supply-side resources are screened for cost-effectiveness; and 2) failing to account for the long-term impacts of energy efficiency on rates. (PSC REF#: 341139.) On the other hand, the ICG's comments in Quadrennial Planning III recommended that the RIM test be incorporated into Focus' cost-effectiveness framework in order to give consideration to near-term impacts on rates. ICG's comments recommended maintaining the Modified TRC as the primary test but that programs meeting a Modified TRC should receive priority based on their RIM test value. (PSC REF#: 341146.)

While the TRC is the most common primary cost-effectiveness utilized by states, a review of state cost-effectiveness tests performed by the National Energy Screening Project (NESP) shows a diversity of primary tests. Twenty-seven states use the TRC (or a modified TRC) as their primary cost-effectiveness test. The next most frequent primary test is the UCT (12 states), followed by the SCT (seven states), state-specific tests (three states), the RIM Test (two states), and the PCT (two states).[28] Five states have not established a primary cost-effectiveness test and four states have established multiple primary tests. Figure 7 below illustrates the diversity of primary cost-effectiveness tests in the United States.

[28] The National Energy Screening Project. *Database of Screening Practices.* Accessed February 21, 2022 from: https://www.nationalenergyscreeningproject.org/state-database-dsp/database-of-state-efficiency-screening-practices/.

Figure 7. State Primary Cost-Effectiveness Test



The evolution of primary cost tests over time is principally attributable to states seeking to align the benefits and costs accounted for in their primary tests with energy efficiency and clean energy policy objectives of the state. Research performed by the ACEEE indicates that a growing number of states have moved to either the UCT or the SCT instead of the TRC Test.[29] The UCT is often considered to be more easily understood for stakeholders and the public compared to the TRC Test because the UCT compares the utility (and, therefore, customer) costs with supply-side alternatives. In that respect, its results can be more concretely expressed as the utility return on program investments. The SCT and the Expanded TRC expand perspective of the TRC test to account for additional quantifiable benefits understood to be attributable to the program. Three states, Maine, New Hampshire, and Rhode Island, have adopted jurisdiction-specific tests in an effort to align cost-effectiveness test components with specific statewide policy objectives.

[29] York, D., C. Cohn, and M. Kushler. 2020. *National Survey of State Policies and Practices for Energy Efficiency Program Evaluation.* Washington, DC: American Council for an Energy Efficient Economy. Accessed from: www.aceee.org/research-report/u2009.

In the Midwest, both Wisconsin and Illinois currently use a modified TRC as their primary cost-effectiveness tests. The Illinois TRC includes an avoided greenhouse gas emissions cost established by legislation and currently set at $16.50 per MWh.[30] Iowa and Minnesota both use the Societal Cost Test as their primary tests. In Michigan, Public Act 295[31] established the UCT as that state's primary cost-effectiveness test.

Commission Alternatives – Quad IV Primary Cost-Effectiveness Test

Alternative One would be to continue using the Modified TRC as Focus' primary cost-effectiveness test. Using the Modified TRC maintains continuity with existing reporting and analysis on Focus cost-effectiveness. This includes the cost-effectiveness ratios historically reported for the program in annual evaluation reports, and the future savings potential identified for Focus.

Alternative Two would be to use the Expanded TRC as Focus' primary cost-effectiveness test. Selecting this test would recognize that Focus statutes identify economic goals for the program in addition to the environmental goals addressed by the Modified TRC. The program's economic impacts are currently assessed every two years as a component of the Commission's contract with the Focus Evaluator. Wisconsin Administrative Code requires cost-effectiveness screening to take place annually. Selecting this alternative would fold the program's modeled economic impacts into the primary test.

Alternative Three would be to use the UCT as Focus' primary cost-effectiveness test. This test would recognize only the benefits and costs to the utilities responsible for funding

[30] ComEd Energy Efficiency Plan 6. Filed March 1, 2021 in Illinois Commerce Commission Docket 21-0155. See Appendix A.
[31] Michigan Legislature - Act 295 of 2008

Focus. The UCT allows for an accurate comparison of demand side management programs to supply-side alternatives from the utility perspective.

Alternative Four would be to use the SCT as Focus' primary cost-effectiveness test. The SCT seeks to include all quantifiable benefits attributable to the program. A choice of the SCT as Focus' primary test would recognize the broad impacts of the program to society as a whole. Selecting this test as primary would elevate it from its current place as the secondary Focus cost-effectiveness test as approved by the Commission for Quad III. While the Program Evaluator has methodologies used currently, this alternative may require additional review and formal approval of the methodologies used to quantify certain non-energy benefits. This approach would be consistent with the Commission's practice of approving methodologies for calculating avoided cost benefits attributable to Focus.

Alternative Five would establish the RIM Test as Focus' primary cost-effectiveness test. A choice of the RIM Test as Focus' primary test would be appropriate if the Commission wishes to base program cost-effectiveness solely on its effects on non-participants.

Alternative Six would establish the TRC as Focus' primary cost-effectiveness test. A choice of the TRC would be appropriate if the Commission wishes to maintain the TRC framework, but determines it is reasonable to exclude the emissions benefits attributable to the program from the program's primary test.

Alternative Seven would establish the PCT as Focus' primary cost-effectiveness test. A choice of the PCT as Focus' primary test would be appropriate if the Commission wishes to base program cost-effectiveness solely on its effects on program participants.

Alternative One: The Focus portfolio shall meet a Modified TRC Test of net cost-effectiveness.

Alternative Two: The Focus portfolio shall meet an Expanded TRC Test of net cost-effectiveness

Alternative Three: The Focus portfolio shall meet a Utility Cost Test of net cost-effectiveness

Alternative Four: The Focus portfolio shall meet a Societal Test of net cost-effectiveness.

Alternative Five: The Focus portfolio shall meet a RIM Test of net cost-effectiveness.

Alternative Six: The Focus portfolio shall meet a TRC Test of net cost-effectiveness.

Alternative Seven: The Focus portfolio shall meet a Participant Cost Test of net cost-effectiveness.

Alternative Eight: Remand the matter back to staff for more information.

Commission Alternatives – Secondary Cost-Effectiveness Tests

In previous Quadrennial Plans the Commission has directed Focus to conduct additional cost-effectiveness tests for informational purposes to assess a wider range of impacts and perspectives than any single, primary cost-effectiveness test could allow for. At present the Expanded TRC Test is conducted to recognize the Commission's interest in Focus' economic impacts; the UCT is conducted to ensure evaluation takes into account the cost-effectiveness of the incentive costs that the TRC Test excludes; the RIM Test to reflect an interest in program near-term rate impacts; and the SCT is conducted to account for the broader range of societal impacts of the program. Of the tests listed in the alternatives below, only the PCT is not currently conducted.

Alternative One: Depending upon the primary cost-effectiveness test selected, one or more of the following shall be used as a secondary test for informational purposes:

a. TRC Test

b. Modified TRC Test

c. Expanded TRC Test

d. Utility Cost Test

e. Societal Cost Test

f. RIM Test

g. Participant Cost Test

Alternative Two: No additional cost-effectiveness tests shall be used for informational purposes.

Low-Income and Income-Qualified Programs in Cost-Effectiveness Testing

A number of states provide specific guidance to energy efficiency programs serving low-income customers in their cost-effectiveness testing. Developing cost-effectiveness rules or approaches that recognize the higher cost-to-serve low-income customers as well as the additional benefits associated with serving these customers is one way that regulators can encourage energy efficiency programs to engage with this population.

Low-income customers face barriers to participation that have impacted their ability to participate in traditional energy efficiency programs. These barriers create potential for inequity by preventing contributing customers from accessing program benefits. These barriers are well-documented in the literature and can include high upfront costs, home readiness deferrals, and lack of awareness of programs and services. From the program administrator perspective, the cost of delivering services to low-income customers are often higher because enhanced incentives are necessary to help minimize upfront cost burdens. In addition, these customers can be difficult to reach because many low-income households are also renters. Additional

administrative cost considerations are also documented in the Phase I staff memorandum. (PSC REF#: 432286 at 96-97.) Applying specific guidance to programs and offerings targeting low-income and income-qualified households in cost-effectiveness testing may decrease the risk of negative impacts to the portfolio's benefit-cost ratio that could result from incurring higher administrative and delivery costs necessary to serve these customers.[32]

Some states exclude low-income programs from portfolio cost-effectiveness calculations, in recognition of the practical expectation that these programs often cannot meet cost-effectiveness screening criteria or to better align with policy priorities. A review of ten leading natural gas efficiency states published in 2020 shows that eight of the ten states reviewed give specific guidance to low-income programs in evaluating cost-effectiveness.[33] Of the states reviewed, this study notes that both Iowa and Michigan exempt low-income programs from their benefit-cost tests and that Oregon excludes low-income weatherization programs from its primary test.

Another way states account for non-energy benefits of programs targeting low-income customers is to apply a generalized adder on top of quantified benefits. An adder can be used to account for benefits from low-income that are difficult to quantify, such as health, comfort, and safety benefits. Some states have adopted percent adders while others use specific dollar adders (e.g., dollar per completed project). States using an adder-based approach in calculating the

[32] Definition of income-qualified and low-income customers used in this memorandum is consistent with the discussion in the Quadrennial Planning Process IV Phase I staff memorandum. Focus defines income-qualified customers as customers with household incomes between 60 and 80 percent of state median income. Low-income customers are defined consistent with the Department of Administration's Low-Income Weatherization Program: customers with household incomes at or below 60 percent of state median income.

[33] Kushler, M., and P. Witte. 2020. *Sustaining Utility Natural Gas Efficiency Programs in a Time of Low Gas Prices*. Washington DC: American Council for an Energy-Efficient Economy. Accessed from: https://www.aceee.org/sites/default/files/pdfs/sustaining_utility_natural_gas_efficiency_programs.pdf.

benefits of low-income programs include: Colorado, Connecticut, Delaware, Massachusetts, Nevada, New Hampshire, New Jersey, Rhode Island, and Vermont.

The Commission's decisions in Phase I of Quadrennial Planning IV directed Focus to enhance its coordination with the Department of Administration (DOA) Weatherization Assistance Program (WAP) to fill potential gaps in offerings to low-income customers. The Commission's decisions further directed Focus to explore developing a community-based pilot in one or more targeted communities to support low-income customers. Finally, the Commission directed the Focus Program Administrator to convene a stakeholder group to gather input on methods to reduce barriers to reach customers in marginalized communities and develop KPIs for income-qualified programs for the Commission's consideration in Phase III of the Quad IV Planning Process. The Commission may want to consider modifying the cost-effectiveness calculation to control for the impacts on portfolio cost-effectiveness due to shifting of program resources and budgets to support these efforts.

Wisconsin Admin. Code § 137.05(12) provides that the energy efficiency and renewable resource programs must pass a portfolio level test of net cost-effectiveness, "as determined by the Commission." This provision further requires that the program administrator "shall screen each energy efficiency and renewable resource program for net cost-effectiveness at least once a year." Each individual program within the Focus portfolio is not required to meet a cost-effectiveness test, but the code appears to require that each program at least be screened for cost-effectiveness and that the portfolio pass a net-cost-effectiveness test. As a result, simply excluding low-income programs from portfolio cost-effectiveness calculations may not be an option in Wisconsin as it is in other states. The Commission does, however, have authority and

discretion to determine what an appropriate cost-effectiveness screening test is for such programs within the portfolio.[34]

The decision alternatives below offer options for the Commission to address whether and how to create specific guidance for initiatives targeting low-income and income-qualified customers. If the Commission concludes that Wis. Admin. Code § PSC 137.05(12) does not prohibit excluding low-income and income-qualified programs from cost-effectiveness screening, it may find it reasonable to exclude these initiatives from evaluation of Focus' portfolio cost-effectiveness similar to the approach adopted in Iowa, Michigan, and Oregon. Alternatively, the Commission may prefer a different approach to quantifying benefits of these initiatives that can be difficult to measure. An adder-based approach, such as those adopted in several states mentioned above, serves as one option. Under this alternative, the Commission could direct the EWG to review and propose to the Commission an approach that applies a benefits adder to account for difficult to quantify impacts of programs targeting low-income and income-qualified customers. This review would ensure that estimated benefits using an adder value align with, and do not double-count, other energy and non-energy benefits calculated in Focus' benefit-cost evaluation.

With either option for applying guidance specifically for low-income and income-qualified offerings in cost-effectiveness testing, it is anticipated that there would be somewhat minimal administrative costs involved. Both options would require the Program Administrator to ensure all incentive and non-incentive costs for these initiatives are tracked and reported

[34] In California, it has established separate portfolios for programs intended to serve distinct purposes. Creating a separate portfolio for low income programs that is distinct from the overall Focus portfolio which has a separate portfolio cost-effectiveness test applied to that distinct portfolio is a potential option. However, the administrative complexities and costs associated with maintaining multiple separate portfolios may outweigh the benefits at this time.

within Focus' SPECTRUM database. In addition, either approach would require the Program Evaluator to ensure that the proper treatment of these programs and offerings is applied when performing their annual cost-effectiveness evaluations.

Commission Alternatives – Low-Income and Income-Qualified Programs and Offerings in Cost-Effectiveness Tests

In the decision alternatives below, staff present the Commission with options for applying specific guidance to programs and offerings targeting low-income and income-qualified customers in Quad IV cost-effectiveness testing. If the Commission finds it appropriate to apply specific guidance in cost-effectiveness testing, the alternatives present options to define the income threshold for which the guidance in cost-effectiveness testing is applied. That is, whether the guidance is applied only to programs and offerings targeting customers meeting the DOA's WAP low-income definition of at or below 60 percent of statewide median income or whether the guidance is applied to a broader segment of customers based on Focus' current income-qualified definition of at or below 80 percent of statewide median income.

Alternative One may be appropriate if the Commission concludes that the code does not prohibit excluding these programs from cost-effectiveness screening and it wants to exclude Focus programs and offerings targeting customers below 80 percent of statewide median income from cost-effectiveness evaluation. Under this alternative, initiatives such as Focus' current Tier 2 incentive offerings would not be factored into cost-effectiveness testing. In addition, the coordination and pilot activities ordered by the Commission in Phase I of the Quad IV Planning Process discussed above would not be included in the evaluation of Focus' portfolio cost-effectiveness.

Alternative Two would be appropriate if the Commission concludes that the code does not prohibit excluding these programs from cost-effectiveness screening and it wants to account for Focus' initiatives targeting customers in the 60 to 80 percent of statewide median income (e.g., Tier 2 incentive offerings) in cost-effectiveness evaluation, but finds it reasonable to exclude those initiatives designed to assist customers below 60 percent of statewide median income from benefit-cost analyses. This would include initiatives that fulfill the Commission's Phase I direction to fill potential gaps in the DOA's weatherization programs as well as exploring a community-based pilot in one or more targeted communities. Under Alternative Two, the costs and benefits associated with coordination and pilot activities to support low-income customers would be excluded from benefit-cost analyses.

Alternative Three would be appropriate if the Commission wants to account for Focus programs and offerings targeting income-qualified and low-income customers in cost-effectiveness testing as it appears may be required by the code, but finds it reasonable to apply a benefits adder to quantify benefits of these efforts that can be difficult to measure rather than excluding these efforts from cost-effectiveness tests. This approach would be consistent with treatment of programs targeting low-income customers in benefit-cost analyses in a number of other states. With a choice of Alternative Three, the EWG would review available data and perform research on adder-based approaches used in other jurisdictions to develop alternatives for the Commission's consideration.

Alternative Four differs from Alternative Three in that a benefits adder would only be applied to those initiatives targeting customers at or below 60 percent of statewide median income (e.g., the coordination and pilot activities ordered in Phase I). Under Alternative Four, the guidance would not apply to offerings targeting customers between 60 and 80 percent of

statewide median income (e.g., Tier 2 incentive offerings) in benefit-cost analysis. This would be consistent with Focus' current treatment of these offerings in the portfolio's primary cost-effectiveness test. With a choice of Alternative Four, the EWG would review available data and perform research on adder-based approaches used in other jurisdictions to develop alternatives for the Commission's consideration.

Finally, Alternative Five is appropriate if the Commission finds it reasonable to account for all initiatives targeting low-income and income-qualified customers in benefit-cost analyses in the same manner as other programs and offerings.

Alternative One – Programs and offerings targeting customers below 80 percent of statewide median income shall be excluded from Focus' primary portfolio cost-effectiveness test.

Alternative Two – Programs and offerings targeting customers below 60 percent of statewide median income shall be excluded from Focus' primary portfolio cost-effectiveness test.

Alternative Three – For purposes of evaluating Focus cost-effectiveness, a benefits adder shall be applied to programs and offerings targeting customers below 80 percent of statewide median income in Focus' primary portfolio cost-effectiveness test. The EWG shall review available options and propose an approach for the Commission's consideration prior to the first program year evaluation of portfolio cost-effectiveness in Quad IV, or by an alternative timeline deemed reasonable by Commission staff.

Alternative Four – For purposes of evaluating Focus cost-effectiveness, a benefits adder shall be applied to programs and offerings targeting customers below 60 percent of statewide median income in Focus' primary portfolio cost-effectiveness test. The EWG shall review available options and propose an approach for the Commission's consideration prior to the first program year evaluation of portfolio cost-effectiveness in Quad IV.

Alternative Five – Status Quo. Specific guidance shall not be applied in Focus' primary cost-effectiveness test to programs and offerings targeting customers below 80 percent statewide median income.

I. Avoided Costs

Avoided costs are a benefit accounted for in cost-effectiveness tests used by energy efficiency and renewable energy programs. They represent the additional costs that would have been borne by the utility and passed along to ratepayers in the absence of program savings. This section presents an analysis and decision alternatives for five types of avoided costs: 1) electric avoided energy costs; 2) electric capacity avoided costs; 3) electric avoided transmission and distribution (T&D) costs; 4) natural gas avoided energy costs; and 5) natural gas capacity avoided costs.

1. Electric Avoided Energy Costs

Since Quad I of Focus, the Commission has found it reasonable to set electric avoided energy costs based on forecasted LMP that is the average of LMPs across Wisconsin nodes.[35] For the purpose of calculating electric avoided energy costs Focus relies on LMP forecasts developed as part of the MISO Transmission Expansion Planning (MTEP) process. An approach using forecasted LMPs as opposed to historical LMPs has been preferred because it is more consistent with the Commission's decision to set Focus' goals based on lifecycle savings and a concern that variation in historical values could lead to a continual shifting of cost-effectiveness inputs that may impact the program's ability to offer consistent programming from year-to-year.

The LMPs currently used in avoided cost calculations can vary at the individual nodes in Wisconsin that inject power into the system, either through generators or connections to the

[35] See: PSC REF#: 166932, PSC REF#: 215245, and PSC REF#: 343909.

regional grid. LMP values at each node serve as a measure of the cost of electricity production (i.e., fuel), as well as the cost of transmitting electricity to the node at a given time which can incorporate system losses and grid congestion. Therefore, LMPs reflect the variable expenses of supplying electricity and do not reflect fixed costs to the system such as capital costs or fixed operations and maintenance (O&M). Fixed costs do not vary on a marginal basis and instead are accounted for and recovered outside the MISO market via the utility rate base.

Commission Alternatives – Electric Avoided Energy Costs

Alternative One is appropriate if the Commission finds it reasonable for Focus to maintain the same approach to calculating electric avoided energy costs as it has since Quad I. This approach uses forward looking MTEP LMP projections as opposed to recent historical prices. Continuing to use Focus' longstanding approach to calculating electric avoided energy costs in Quad IV would allow for these benefits to be directly comparable to electric avoided energy costs from prior quadrennial periods.

Alternative Two is appropriate if the Commission finds that Focus' approach to calculating electric avoided energy costs is not in alignment with its goals or priorities for the program. With a choice of Alternative Two, the Commission would direct the EWG to develop a recommendation for an alternative methodology for the Commission's consideration based on its discussion.

Alternative One: Status Quo. For the purposes of evaluating Focus, electric avoided energy costs shall be based on a forecasted LMP that is the average of LMPs across Wisconsin nodes.

Alternative Two: The EWG shall review available data and alternative methods for calculating electric avoided energy costs and report its findings and recommendations to the

Commission prior to the first program year evaluation of portfolio cost-effectiveness in Quad IV, or by an alternative timeline deemed reasonable by Commission staff.

Alternative Three: Other action consistent with the Commission's discussion.

2. Avoided Electric Capacity Costs

For the purposes of evaluating Focus, avoided electric capacity costs have been defined based on the unit cost of a peaker plant. (PSC REF#: 343909.) During Quad III of Focus, the EWG proposed a recommended methodology for calculating avoided electric capacity costs based on the most recent MISO Cost of New Entry (CONE) values for Local Resource Zone (LRZ) 1 and LRZ 2 plus a weighted average of the net revenues estimates from the MISO Narrow Constrained Area (NCA) Mitigation Threshold Report. (PSC REF#: 386919.) This methodology was approved by the Commission in its June 1, 2020 Order. (PSC REF#: 390566.) The Commission concluded that the EWG's recommended approach is consistent with industry best practices, provides an appropriate level of regional specificity, and properly captures the full cost of operating and new peaking resources.

Commenters in Quadrennial Planning II and Quadrennial Planning III suggested that avoided electric capacity costs should also include the cost of baseload and intermediate plants, arguing that excluding those costs lead to an undervaluing of the total avoided costs achieved by the program. CUB's comments in Quadrennial Planning III supported EWG investigating an appropriate adder value to recommend to the Commission to account for avoided costs of base load and intermediate plants. (PSC REF#: 341150.) An argument could be made that excluding those costs undervalues the total avoided costs achieved by the program. While avoided electric energy costs achieved by the program are variable (per-kWh costs reflected by LMPs), avoided costs for baseload and intermediate capacity reflect long-term fixed costs. Consequently, the

energy savings from Focus could allow Wisconsin utilities to reduce the scale of future spending on base load infrastructure. EWG's comments in Quadrennial Planning II stated that base load and intermediate resources capital costs should be treated as avoided energy costs since those capital and O&M costs help achieve lower system energy costs. (PSC REF#: 203501.) The Quadrennial Planning III staff memorandum identified capacity additions forecasted by MISO through its MTEP process, as well as forecasts of capital and fixed operations and maintenance costs developed by MISO and the Energy Information Administration (EIA) as potential sources for forecasting appropriate costs for baseload and intermediate infrastructure. (PSC REF#: 339941.)

Energy supply projections from the PSC's Strategic Energy Assessment (SEA) show a net increase in electric capacity development in the state through 2026. The SEA report identifies approximately 2,700 MW of new owned or leased generation capacity between 2020 and 2026. The SEA identifies 836 MW of base and intermittent capacity retirements and 642 MW of peaking capacity retirements during the 2020-2026 period. (PSC REF#: 397611 at 19.)

Commission Alternatives – Avoided Electric Capacity Costs

Alternative One: Status Quo. For the purposes of evaluating Focus, avoided electric capacity costs shall continue to be based on the unit cost of a peaker plant consistent with the approach approved by the Commission during Quad III.

Alternative Two: For the purposes of evaluating Focus, avoided electric capacity costs shall incorporate the unit cost of a peaker plant consistent with the approach approved by the Commission during Quad III and of baseload and intermediate capacity. The EWG shall review available data for determining the appropriate value of baseload and intermediate capacity and report its findings and recommendations for including these values in Focus' avoided electric

capacity costs prior to the first program year evaluation of portfolio cost-effectiveness in Quad IV, or by an alternative timeline deemed reasonable by Commission staff.

Alternative Three: Other action consistent with the Commission's discussion.

3. Avoided T&D Costs

In Quadrennial Planning III, a number of commenters recommended developing avoided transmission and distribution (T&D) costs for the purpose of accounting for those benefits in the evaluation of Focus' cost-effectiveness.[36]

In its Order from June 1, 2020 approving a methodology for calculating avoided electric capacity costs, the Commission also directed EWG to propose a method for calculating avoided T&D costs for the purpose of evaluating Focus. (PSC REF#: 390566.) In early 2021, the Commission approved EWG's recommended methodology for calculating the avoided T&D benefits of Focus.[37] (PSC REF#: 406591.) The EWG's recommended methodology relies on publicly available transmission line statistics data reported to the Commission annually by investor-owned utilities and American Transmission Company, LLC (ATC).[38]

Focus first began incorporating avoided T&D costs into its annual program evaluation of cost-effectiveness beginning with the CY 2020 program year. In 2020, estimated avoided T&D costs accounted for $54.7 million in program benefits. The inclusion of avoided T&D costs increased the CY 2020 portfolio Modified TRC from 2.24 to 2.43.[39] Estimated CY 2021

[36] PSC REF#: 341122, PSC REF#: 341139, PSC REF#: 341150
[37] Commissioner Nowak dissented.
[38] IOU Annual Reports are filed by utilities each year as required under Wis. Stat. § 196.07. Transmission line statistics data used for the avoided T&D approach are reported under Schedule E-30 of these reports. Accessed from: https://apps.psc.wi.gov/ARS/annualReports/default.aspx.
[39] Cadmus Group. May 2021. *Focus on Energy Calendar Year 2020 Evaluation Report: Volume I.* Accessed from: https://focusonenergy.com/sites/default/files/inline-files/Evaluation_Report-2020-Volume_I.pdf.

avoided T&D costs totaled $57.0 million. The portfolio Modified TRC without avoided T&D costs was 2.15. The portfolio Modified TRC with avoided T&D costs was 2.35.

As noted in the January 20, 2021 Commission memorandum, EWG and stakeholders representing industrial customers, renewable energy advocates, and ratepayer advocates had some concerns regarding the ability to discern from the data available in the annual investor owned utility (IOU) reports which projects were representative of the costs avoided by Focus programs. (PSC REF#: 403255.) The EWG recommended that it continue to monitor the impacts of avoided T&D on portfolio cost-effectiveness, assess the appropriateness of the methodology through the remainder of Quad III, and revisit the topic as part of Quad IV planning. The Commission accepted these recommendations by ordering the Focus Evaluator to review avoided T&D costs annually and present results to the EWG and by directing staff to pursue modifications to the annual IOU reporting requirements to gain additional clarity with respect to the purpose of the T&D projects reported. (PSC REF#: 406591.)

Staff explored options for modifying annual IOU reports and found that with regards to transmission projects, since only two entities, ATC and NSPW, own and operate transmission infrastructure in Wisconsin, it would be more practical to request data directly rather than pursue modifications to the annual IOU reports. With respect to detailed data regarding utility distribution system investments, it was learned that Commission staff has inquired with utilities about these data in the past for planning purposes and have encountered difficulties obtaining the information. Staff familiar with these difficulties noted obstacles including complexity due to multiple reasons for the investments, stakeholder interests, and the proprietary nature of the information.

Commission staff requested data on the primary purpose of transmission infrastructure investments from ATC as an initial step to understand what data may be available to inform the avoided T&D calculation. Specifically, staff requested data from ATC that would identify the primary purpose of the transmission line investments reported to the PSC. ATC staff provided these data and Cadmus was able to incorporate them into its most recent review of avoided T&D costs. The Focus Evaluator notes that the ATC data are an improvement over the information reported in annual IOU reports, however, certain data issues persist. For instance, the ATC data shows a significant range of transmission project costs per mile. Further, while the data provided indicates the primary purpose of the investment, it does not provide context explaining the reason for these extremes. Thus the range cannot be easily explained without back and forth conversations with ATC staff, increasing the time and effort to perform annual reviews of avoided costs. Second, the ATC data are not publicly available. While ATC staff have been responsive to inquiries, there is no guarantee that these data will continue to be reliably available into the future.

The EWG reviewed updated avoided T&D costs that incorporated the ATC data in late-March 2022. At this meeting, the EWG also discussed the current methodology in light of the data acquired from ATC. The EWG believes that the current methodology remains sound and is producing reasonable results within the range of benchmarked programs. However, it is apparent that data quality and data access will continue to be a challenge going forward. While hopeful that its initial recommended approach would be supported through improved access to more detailed data, the EWG remains concerned that the most promising avenue toward acquiring these data does not meet the group's preferences for publicly available data that is regularly and reliably updated. Furthermore, since there is no viable source detailing utility

distribution system investments and their primary purpose, it is also likely that the current method will continue to omit avoided distribution systems costs, thus continuing to under-represent these benefits.

The Focus Evaluation Team continues to explore alternative approaches to estimate avoided T&D costs. A high level review of alternative approaches was presented to the EWG at its March 2022 meeting. One particularly promising approach was demonstrated to produce results in line with current avoided T&D values used by Focus, and uses a transparent and straightforward approach based upon publicly available, Wisconsin-specific data from ATC that is reliably updated. Following its review of updated avoided costs, a discussion of the identified data challenges, and a review of potential alternative methodologies, the EWG's consensus was support for further investigation and definition of an improved methodology that could be presented to the Commission early in Quad IV. If adopted, the revised calculation of avoided T&D benefits would be applied to Focus cost-effectiveness testing throughout Quad IV.

Commission Alternatives – Avoided T&D Costs

Staff present the Commission with four alternatives in determining how it wishes to address avoided T&D costs in Quad IV. Alternative One represents a continuation of the current method of calculating avoided T&D benefits. This approach relies on a combination of publicly available data reported annually to the PSC and non-public data provided by ATC upon request. A choice of this alternative would be appropriate if the Commission does not share the EWG's concerns regarding the lack of access to detailed transmission and distribution system investment data that is publicly available and reliably updated.

Alternative Two is appropriate if the Commission agrees with the EWG's recommendation to explore an alternative method for calculating avoided T&D benefits for the

purpose of evaluating Focus in Quad IV. Selection of Alternative Two would direct the EWG to recommend a revised method for the Commission's consideration prior to evaluating the first program year of Quad IV.

Alternative Three would be appropriate if the Commission finds it reasonable to exclude avoided T&D benefits from Focus' evaluation of cost-effectiveness in Quad IV.

Alternative One: Status Quo. For purposes of evaluating Focus, avoided electric transmission and distribution costs shall continue to be calculated using an incremental cost approach based on recent transmission line investments reported in annual investor-owned utility reports and data requested and received from entities owning and operating electric transmission and distribution infrastructure in the state.

Alternative Two: The EWG shall present to the Commission for its consideration an alternative method (or multiple alternative methods) for calculating avoided electric transmission and distribution costs for the purpose of evaluating Focus in Quad IV. The EWG shall submit its proposed recommendation prior to the first program year evaluation of portfolio cost-effectiveness in Quad IV, or by an alternative timeline deemed reasonable by Commission staff.

Alternative Three: Avoided electric transmission and distribution costs shall not be estimated for the purpose of evaluating Focus in Quad IV.

Alternative Four: Other action consistent with the Commission's discussion.

4. Natural Gas Avoided Costs

Focus' current approach for calculating avoided natural gas costs was first approved by the Commission in 2015, following an EWG review and recommendation. (PSC REF#: 232431.) This method calculates natural gas costs specific to Wisconsin by using forecasted Henry Hub natural gas prices from the most recent EIA Annual Energy Outlook (EIA AEO), and using other EIA data to account for the additional transport, storage, and distribution costs

associated with delivering gas to Wisconsin customers. Transport and storage costs are accounted for by increasing the forecasted Henry Hub price by the 5-year average historical difference between Henry Hub prices and the Wisconsin City Gate prices. Avoidable distribution costs are accounted for by increasing adjusted City Gate prices based on the 5-year average historical differential between Wisconsin City Gate prices and Wisconsin retail prices after reducing the total differential to factor out the proportion of those costs that are fixed in the short-term. The Commission ordered that avoided cost calculations using this method be updated for each new Focus quadrennium, and may be updated at other times, if deemed appropriate by the EWG based on changes in conditions. (*Id.*)

At its meeting of March 31, 2022, the EWG determined that the current approach to calculating avoided natural gas costs continues to be sound and maintaining the approach in Quad IV would be appropriate. The data used for Focus' natural gas avoided cost method continues to satisfy the EWG's primary criteria used to support its recommendation: 1) the data are from a transparent and publicly available source that can be obtained at no additional evaluation cost; and 2) the data are consistently and reliably updated. Further, using the EIA AEO forecasts in the calculation of avoided natural gas costs is consistent with the approach used in other states. For example, efficiency programs throughout the New England region use EIA forecasts for the purposes of estimating avoided costs over a 30-year time period.[40]

Commission Alternatives – Avoided Natural Gas Costs

The decision alternatives below present options for the Commission's consideration regarding the approach to quantifying avoided natural gas costs for the purpose of evaluating Focus. Alternative One is appropriate if the Commission agrees with the EWG's assessment

[40] Synapse Energy Economics. 2021. *Avoided Energy Supply Components in New England: 2021 Report*. Accessed from: https://www.synapse-energy.com/sites/default/files/AESC_2021_.pdf.

that the current approach to quantifying these benefits continues to be reasonable. Alternative Two is appropriate if the Commission believes that the current approach does not align with its priorities for Focus and that the EWG should propose a different approach for the Commission's consideration.

Alternative One: Status Quo. For the purposes of evaluating the Focus program, avoided natural gas costs shall continue to be calculated based on EIA forecasts of Henry Hub prices adjusted using Wisconsin City Gate prices and retail prices to estimate avoided natural gas costs in Wisconsin.

Alternative Two: Direct the EWG to propose a different method for calculating avoided natural gas costs consistent with the Commission's discussion. The EWG shall provide its proposed alternative method prior to the first program year evaluation of portfolio cost-effectiveness in Quad IV, or by an alternative timeline deemed reasonable by Commission staff.

Alternative Three: Other action consistent with the Commission's discussion.

J. Carbon Value

Focus' primary cost-effectiveness test (the Modified TRC) has included a value of the avoided emissions that result from program energy savings since Quad I. The Modified TRC accounts for the avoided emissions of nitrous oxides (NO_x), sulfur oxides (SO_x), and carbon dioxide (CO_2). Monetary values for NO_x and SO_x are set at the values established in national markets for trading emissions allowances. Because there is no national market for CO_2 emissions, there is no single accepted market value, and determining an appropriate value for Focus benefit-cost analysis has been treated as a policy decision for the Commission to make in the Quadrennial Planning Process.

The value of carbon can be defined based on either its market value or its social costs. Market-based values are based on the value of per-ton emissions allowances traded in organized emissions markets, and therefore reflect the costs to market participants of achieving carbon reductions in those regions. The social cost of carbon is calculated to include a range of economic costs to society resulting from carbon emissions, such as increased health care costs, environmental damages, and decreased agricultural productivity.

The Phase I staff memorandum described the Commission's decisions in setting a carbon value during prior Quadrennial Planning Processes. (PSC REF#:432286 at 8-9.) The carbon value approved by the Commission in Quad I was $30 per ton intended to "strike a balance between the two primary sources for determining carbon values: market-based values and the long-term societal value of reduced emissions." (PSC REF#: 141173.) In both Quad II and Quad III the Commission elected to adopt a proxy market-based value of carbon at $15 per ton. (PSC REF#: 215245, PSC REF#: 279739, and PSC REF#: 343909.) It should be noted that, unlike other benefits accounted for in Focus' cost-effectiveness evaluation, current practice does not involve escalating the $15 per ton carbon value over time based on projections of future market prices. Rather, it is held constant over the lifecycle of savings achieved.

The issue before the Commission in this phase of Quad IV Planning is whether it is appropriate to maintain a market-based value, adopt a social cost of carbon, or establish a different approach to valuing avoided carbon emissions for the purposes of assessing the benefits of Focus.

Market-Based Carbon Value

There are two types of carbon markets: 1) markets based on meeting mandatory regulatory compliance laws (compliance markets) and 2) voluntary markets where carbon credits

are traded on a voluntary basis. Compliance markets are typically organized by governments to limit emissions of greenhouse gas (GHG) emissions by setting allowable emissions limits (a cap) and allowing targeted emitters (e.g., power generators) to buy and sell unused allowances to other emitters or other parties (trade). California's Cap-and-Trade Program is an example of a compliance market; the Regional Greenhouse Gas Initiative (RGGI) is another example. Eleven states in the northeast and mid-Atlantic regions of the U.S. participate in RGGI.[41] Voluntary markets are typically organized by private entities such as businesses looking to achieve corporate emissions goals.

Wisconsin and its regional grid operator do not participate in a carbon compliance market. Consequently, market-based values from California or RGGI do not reflect any actual cost savings incurred by emitters in Wisconsin. Focus' current market-based carbon value was set by the Commission following recommendations by the EWG in 2018. The EWG's recommendations were informed by a report developed by Synapse in 2015 examining compliance market carbon values in California and the Northeast.[42] Commission staff requested the Program Evaluator, Cadmus, to perform an updated review of California Air Resources Board (CARB) and RGGI market prices and projections and other regulatory updates in early 2022. The summary of current market-based prices below is based on the findings of that review.

An analysis of recent CARB and RGGI carbon market auctions shows that these markets have distinctly different settlement prices, that prices in both markets have gradually increased over the last five years, and that there were notable increases in the market-based carbon value in

[41] As of the time staff were drafting this memorandum, Pennsylvania was engaged in the process to join RGGI by July 1, 2022. Upon joining, Pennsylvania would become the twelfth RGGI state.
[42] Synapse Energy Economics. (2015). 2015 Carbon Dioxide Price Forecast. Accessed from: https://www.synapse-energy.com/sites/default/files/2015%20Carbon%20Dioxide%20Price%20Report.pdf.

2021 for both markets. The most recent market settlement price available at the time of Cadmus' review was $29.15/ton in the CARB market[43] and $13.50/ton in the RGGI market[44]. Projections of future carbon prices at auction similarly show a disparity of market prices between the two markets. California's Energy Commission projects three scenarios for its carbon prices ranging between a net present value of $26 and $97 per ton by 2030.[45] RGGI prices are projected to range between a net present value of $11 and $24 per ton in 2030.[46]

The examples of the two active carbon compliance markets in the U.S. indicate uncertainty with respect to future price increases. These markets are influenced by multiple factors including the number of carbon allowances issued at each auction, extreme weather events, and other market circumstances. Furthermore, these markets are highly controlled and regulated. It is possible that regulatory updates could modify the structure of those markets that could influence prices at auction. Decisions to institute price ceilings and price floors in the CARB and RGGI markets in 2021 are examples of policy decisions impacting market prices.

Social Cost of Carbon

The social cost of carbon (SCC) is a monetary estimate of the damages caused by emitting one additional ton of carbon dioxide into the atmosphere. The SCC was developed to inform decision making and to evaluate the cost-effectiveness of policies to address GHG mitigation. In the U.S., the SCC values most frequently adopted are those created by the U.S.

[43] California Air Resources Board. (February 2022). *California Cap-and-Trade Program: Summary of California-Quebec Joint Auction Settlement Prices and Results.* Accessed from: https://ww2.arb.ca.gov/sites/default/files/2020-08/results_summary.pdf.
[44] RGGI Inc. (11, March 2022). *CO_2 Allowances Sold for $13.50 in 55th RGGI Auction.* Accessed from: https://www.rggi.org/sites/default/files/Uploads/Auction-Materials/55/PR031122_Auction55.pdf.
[45] California Energy Commission Energy Assessment Division. (19, December 2016). *Preliminary GHG Price Projections.* Accessed from: https://efiling.energy.ca.gov/GetDocument.aspx?tn=216271.
[46] The Regional Greenhouse Gas Initiative. (19, December 2017). *RGGI 2016 Program Review: Principles to Accompany Model Rule Amendments.* Accessed from: https://www.rggi.org/sites/default/files/Uploads/Program-Review/12-19-2017/Principles_Accompanying_Model_Rule.pdf.

Government's Interagency Working Group on Social Cost of Greenhouse Gases (IWG).[47] The IWG's values for the SCC are based on modeling that translates projections of global emissions to monetary impacts to the economy. The IWG has developed multiple scenarios recognizing the inherent uncertainty in modeling outcomes.

Thirteen states are currently using the SCC in their policy proceedings as a means to account for the impact of greenhouse gas emissions.[48] Seven states use a SCC in their energy efficiency programs' primary cost-effectiveness tests.[49,50]

At the request of Commission staff, Cadmus performed a review of carbon valuation methods and their potential impacts to the Focus portfolio in late-2020.[51] This analysis examined the IWG's SCC values based on the four different scenarios in its most recent technical documents. The four modeling scenarios represent averages of the model runs using discount rates of 5 percent, 3 percent, 2.5 percent and an additional high impact scenario representing the 95th percentile of model runs using a 3 percent discount rate. In each of the scenarios, the SCC value increases over time with the magnitude of the increase influenced by the discount rate. This change in price over time differs from Focus' current approach of using a market-based value that is fixed at $15 per ton applied over the lifecycle of the savings achieved.

[47] Interagency Working Group on Social Cost of Greenhouse Gases, United States Government Technical Support Document: Social Cost of Carbon, Methane, (whitehouse.gov) Technical Support Document: Social Cost of Carbon, Methane, (whitehouse.gov) (February 2021).
[48] Institute for Policy Integrity, New York University School of Law. (n.d.). *The Cost of Carbon Pollution: States Using the SCC*. Accessed from: https://costofcarbon.org/states.
[49] States using a social cost of carbon in their primary tests include: Colorado, Illinois, Maryland, Massachusetts, Minnesota, New Jersey, and New York.
[50] Roe. H. (December 2021). *Analysis of State Approaches to Cost-Effectiveness Testing*. Efficiency Vermont R&D Project: Cost-Effectiveness Screening Tests. Accessed from: https://www.efficiencyvermont.com/Media/Default/docs/white-papers/Analaysis_of_State_Approaches_to_Cost-Effectiveness_Testing.pdf.
[51] Cadmus. (December 2020). *Carbon Pricing Methods: Effects on the Valuation of Energy Efficiency*. Accessed from: https://focusonenergy.com/sites/default/files/inline-files/Potential_Study-Research-Carbon_Pricing.pdf.

The Focus EWG reviewed the results of Cadmus' analysis in January 2021 and discussed which of the IWG's four scenarios would be most appropriate to apply to Focus, should the Commission elect to adopt a SCC for the purposes of assessing program benefits in Quad IV. The EWG consensus recommendation was that the IWG's 3 percent discount rate scenario (represented by the green line in Figure 8) would be most appropriate in the event the Commission favored adopting a SCC for the program. EWG's rationale for this decision was that the Central Scenario is the most widely accepted valuation for the SCC, is consistent with the Biden administration's interim social cost of carbon value, and strikes a balance between the IWG's high impact and five percent discount rate scenarios. Table 6 shows the carbon value over time using the IWG's 3 percent discount scenario (Central Scenario).

Figure 8. Interagency Working Group Social Cost of Carbon Scenarios

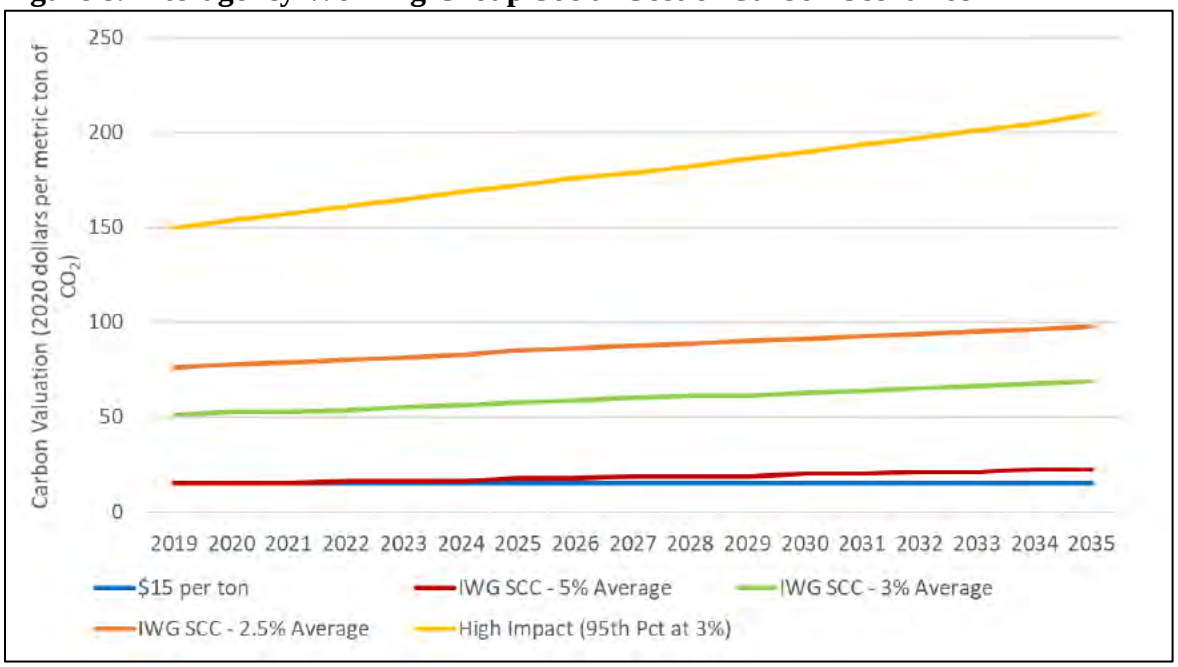


Table 6. Interagency Working Group Social Cost of Carbon, 3% Discount Rate Scenario

Year	Carbon Value* [2020 USD / ton CO_2]	Year	Carbon Value* [2020 USD / ton CO_2]
2020	$52	**2036**	$70
2021	$52	**2037**	$71
2022	$54	**2038**	$72
2023	$55	**2039**	$74
2024	$56	**2040**	$75
2025	$57	**2041**	$76
2026	$59	**2042**	$76
2027	$60	**2043**	$77
2028	$61	**2044**	$79
2029	$61	**2045**	$80
2030	$62	**2046**	$81
2031	$64	**2047**	$82
2032	$65	**2048**	$84
2033	$66	**2049**	$85
2034	$67	**2050**	$86
2035	$69		

*Calculated and interpolated from IWG values expressed in 2007 US Dollars per metric ton of CO_2

The Commission may want to adopt a SCC for the purposes of evaluating Focus' cost-effectiveness beginning in Quad IV. The Commission's Phase I decision on the topic of potentially aligning Focus' performance goals with decarbonization goals determined that Quad IV would serve as a transitional period to position the program to play a larger role in cost-effectively reducing carbon emissions. (PSC REF#: 435163.) The Commission may find that applying a SCC value in Quad IV cost-effectiveness testing aligns with this decision and its priorities for the program going forward. For instance, applying a SCC beginning in Quad IV may be a reasonable step to begin aligning Focus with broader decarbonization goals and would assist in establishing an updated baseline measure of cost-effectiveness for the portfolio. Overall, adopting a SCC would indicate that the Commission values the program's carbon emissions reduction according to its impacts on society at-large.

Alternatively, a market-based value measures the program's benefits in avoiding costs of complying with emissions standards in a regulated market. Continuing to use a market-based carbon value may be preferred if the Commission determines that a value measuring the program's benefits in avoiding costs of complying with emissions standards in a regulated market (for which Wisconsin is not a party) is the most appropriate approach. Maintaining a market-based value would also allow for direct comparability to prior years' estimates of the program's avoided carbon emissions benefits.

The Commission's decisions in Phase I of the Quad IV Planning Process to position Focus toward a greater role in cost-effectively reducing carbon emissions with Quad IV serving as a transitional period may cause the Commission to consider the appropriateness of using a social cost of carbon for the purposes of evaluating Focus' cost-effectiveness in Quad IV. A choice of a market-based carbon value could be argued to be incongruent with the Commission's decision seeking to emphasize the program's ability to achieve carbon emissions reduction in service of broad decarbonization goals centered on mitigating the impacts of climate change on society as a whole. However, the Commission may find it appropriate to maintain a market-based value in Quad IV, or adopt a modified market-based value similar to its decision in Quadrennial Planning Process I to use a carbon value of $30 per ton, as part of a transitional period leading toward the program playing a larger role in cost-effectively reducing carbon emissions. Adopting a SCC in Quad IV may be appropriate if the Commission wants the program to begin to monetize the impact of CO_2 emissions on society at-large in support of its direction to make measurable progress toward a transition to greater emphasis on reducing carbon emissions.

Focus' current approach to incorporating avoided carbon emission benefits into portfolio cost-effectiveness testing does not take into account when a measure is saving energy and the carbon intensity of the grid when those savings occur. Each unit of savings generates the same amount of avoided carbon emissions benefits. Consequently, under the current framework, adopting a different carbon value would simply result in a proportional increase or decrease in the cost-effectiveness of all measures, depending on the whether the value is greater than or less than $15 per ton. As part of Phase I of Quad IV Planning, the Commission directed the EWG to investigate and recommend enhanced measurement of the program's carbon emissions reduction impacts. The outcome of this effort is intended to more accurately account for the benefits of those impacts.

The *2021 EE Potential Study* modeled the impacts on using a social cost of carbon value on Focus' savings potential. The study found that shifting from a market-based carbon value of $15 per ton to a social cost of carbon resulted a 6.3 percent increase in cost-effective electric savings potential and a 28.7 percent increase in cost-effective natural gas savings potential. (PSC REF#: 420467 at 62.)

Commission Alternatives – Value of Carbon

Alternative One is to maintain a market-based value of $15 per ton in Quad IV, consistent with the value used since Quad II of Focus. This alternative would be reasonable if the Commission believes a market-based value is the most appropriate approach and that it is not necessary for the EWG to provide an updated range of values for the Commission's consideration based on recent market values observed in the U.S.

Alternative Two is to maintain a market-based carbon value and request EWG to provide an updated range of alternative values for Commission consideration based on active U.S. carbon markets.

Alternative Three is to establish a social cost of carbon based on the EWG's review and recommendation. That is, adopt the Interagency Working Group on Social Cost of Greenhouse Gases' Central Scenario as the basis for Focus' carbon value. This alternative would be reasonable if the Commission wants Focus to begin to monetize the impact of CO_2 emissions on society at-large in support of its direction to make measurable progress toward a transition to greater emphasis on reducing carbon emissions.

Alternative Four is to establish a different carbon value consistent with the Commission's discussion. Alternative Four may be appropriate if the Commission does not want to use either a purely market-based value or a purely social cost value in setting the cost of carbon value for purposes of evaluating Focus cost-effectiveness. This approach would be consistent with the Commission's decisions for Quad I of Focus where its choice of $30 per ton was made to strike a balance between a market-based and social cost of carbon.

Alternative One: Status Quo. Focus cost-effectiveness tests shall value avoided CO_2 emissions using a market-based value of $15.00 per ton.

Alternative Two: Focus cost-effectiveness tests shall value avoided CO_2 emissions using an updated market-based value. No later than September 30, 2023, the EWG shall provide a report to the Commission on alternatives for an appropriate market-based carbon value, at which time the Commission will select the preferred valuation.

Alternative Three: Focus cost-effectiveness tests shall value avoided CO_2 emissions using a social cost of carbon using the U.S. Government's Interagency Working Group's "central" estimates.

Alternative Four: Focus cost-effectiveness tests shall value avoided CO_2 emissions using a different value , or another estimate provided by the U.S. Government's Interagency Working Group, consistent with the Commission's discussion.

K. Discount Rate

Cost-effectiveness tests are designed to identify the present value of program costs and benefits, so that they can inform present-day program decisions. While test costs – program spending and customer purchase costs – are incurred in the same year as the test, the value of benefits achieved through avoided costs and avoided emissions occurs over the lifetime of the installed products. Therefore, a discount rate is applied to future benefits so they can be compared to present-day costs. In simple terms, discounting tells us how much the benefits that will accrue in the future are worth to us today. The higher the discount rate, the more value is placed on short-term benefits versus long-term benefits. The compounding nature of the discount makes those benefits realized far into the future much less valuable than benefits realized in the near-term. A higher discount rate may also seek to balance the consideration that there is risk that unforeseen events may prevent future benefits from being achieved. A low discount rate implies that near-term benefits are not valued much more than future benefits. A discount rate of zero values future benefits the same as near-term benefits.

The discount rate assumption is a significant driver of program cost-effectiveness. This is particularly the case under a lifecycle savings framework where the program is encouraged to promote measures with long EULs that will generate savings many years into the future. Under

a lifecycle savings framework, the benefit cost ratio compares the costs that are incurred in the most recent program year to the benefits generated in that program year as well as the discounted benefits achieved over the life of the measure installed.

The Commission has set a discount rate of 2.0 percent since Focus' first Quadrennial Planning Process. This discount rate has been applied to all cost-effectiveness tests (i.e., primary and informational) ordered by the Commission. In setting a 2.0 percent discount rate, the Commission has noted that it is generally consistent with values used in other states, reflects the lower risk of energy efficiency and renewable energy investments through Focus, and strikes a balance between the short-term and long-term benefits of the Focus program. (PSC REF#: 215245 and PSC REF#: 343909.)

Three types of discount rates are used by energy efficiency and renewable energy programs across the country. Just as each cost-effectiveness test assumes a particular stakeholder's point-of-view, the appropriate discount rate assumption can depend on the stakeholder's perspective. The U.S. EPA's National Action Plan for Energy Efficiency[52] recommends the following:

- A societal discount rate should be applied when using the Societal Cost Test.
- The utility weighted average cost of capital should be applied when using the UCT, the TRC Test, or the RIM Test.
- A customer discount rate should be used when applying the PCT.

A societal discount rate may be selected by decision-makers for energy efficiency and renewable energy programs on the reasoning that programs reflect a public investment to achieve

[52] National Action Plan for Energy Efficiency. (2007). *Guide to Resource Planning with Energy Efficiency*. Prepared by Snuller Price et al., Energy and Environmental Economics, Inc. Access from: https://www.epa.gov/sites/default/files/2015-08/documents/resource_planning.pdf.

social benefits, such as climate change mitigation or reduced energy costs, rather than a private investment tied to market rates. Societal discount rates tend to be low compared to other discount rates and can be set as low as zero percent, reflecting the assumption that society values present and future benefits equally. Many decision-makers assume that societal rates should reflect society-wide assessments of risk, and use societal rates based on publicly offered investments such as Treasury bill interest rates.

By capturing the value to participating utilities of all their capital options, using the weighted cost of capital allows direct comparison of the costs of investing in demand-side savings and procuring supply-side resources. Therefore, a weighted cost of capital rate only considers the perspective of the utility. Some programs adjust the weighted cost of capital to account for differences in the risk profile of energy efficiency and other capital investments. Because many energy efficiency and renewable energy programs are funded through system benefits charges that have low risk of non-recovery and fund installation of measures that have a high probability of achieving a future stream of benefits, some decision-makers conclude that energy efficiency and renewable energy programs should carry a lower discount rate than supply-side options. The Commission's selection of a 2.0 percent discount rate in the second and third Quadrennial Planning Processes was intended to reflect this risk adjustment, noting that this rate was consistent with the interest rate for U.S. Treasury bills, a common reference for risk-adjusted rates.

In early 2022, the U.S. Treasury long-term composite rates increased from levels observed over the past few years to exceed three percent. Over the past 10 years, rates have been

as high as 3.7 percent in late 2013 to as low as 0.97 percent in March of 2020.[53] The average rate over the Quad III period through early May 2022 has been 2.0 percent.

A customer discount rate is set based on the perspective of an individual or household. This can be reflected as the consumer lending rate, since this is the debt cost an individual would pay to finance an energy efficiency improvement. These rates can vary based on multiple factors specific to the individual. A reasonable value based on current consumer loans may be 10 percent.

Commission Alternatives – Discount Rate

Alternative One is to set a societal discount rate of zero percent and equally value present and future benefits. A discount rate of zero percent would align with a priority to position Focus as a driver of decarbonization and climate change mitigation during Quad IV. This alternative would be appropriate if the Commission places a high priority on the long-term value of carbon emissions reductions achieved by Focus. A societal discount rate would also be consistent with the use of a primary cost-effectiveness test that values emissions and other social benefits, such as the Modified TRC or the SCT.

Alternative Two maintains Focus' current discount rate of 2.0 percent. Maintaining a 2.0 percent discount rate may be appropriate if the Commission prefers to maintain a risk-adjusted discount rate consistent with U.S. Treasury bill rates and with its decisions in prior Quadrennial Planning Processes. As of early-May 2022 long-term composite Treasury bill rates were showing an upward trend and exceeding 3 percent. Maintaining a discount rate of 2.0 percent

[53] U.S. Department of the Treasury. *Daily Treasury Long-Term Rates.* Accessed from: https://home.treasury.gov/resource-center/data-chart-center/interest-rates/TextView?type=daily_treasury_bill_rates&field_tdr_date_value_month=202205.

would be appropriate if the Commission believes that even given the recent rate increase, average rates will remain relatively steady over the next few years.

Alternative Three is to set the discount rate based on utility cost of capital. Under this alternative, a discount rate of 7.3 percent would be established to reflect the average weighted cost of capital in each investor-owned utility's most recent rate case.

Alternative Four would be to set a discount rate at a different percent. This alternative may be appropriate if the Commission believes a risk adjustment to weighted average cost of capital is appropriate, but believes the appropriate adjustment should be different than the 2.0 percent option in Alternative Two. For instance, an alternative value may be appropriate if the Commission prefers to maintain a risk-adjusted discount rate but thinks that long-term interest rates that form the basis of this adjustment are likely to remain higher than they have in recent years. This alternative may also be appropriate if the Commission believes that a societal discount rate is appropriate, but that this rate should be greater than zero.

Alternative One: Use a discount rate of zero percent in Focus' cost-effectiveness tests.

Alternative Two: Status Quo. Use a discount rate of 2.0 percent in Focus' cost-effectiveness tests.

Alternative Three: Use a discount rate of 7.3 percent in Focus' cost-effectiveness tests.

Alternative Four: Use a different discount rate consistent with the Commission's discussion.

II. BUDGETS

A. Overall Focus Budget Determination

In order to examine the Energy Efficiency and Renewable Program budgets, it is necessary to explain how these budgets are calculated. On the revenue side, the Focus program is funded at approximately $100 million per year from a statutorily required 1.2 percent of Investor Owned Utility (IOU) retail revenue and approximately $3.2 million from municipal electric and electric cooperatives.[54] For example, in 2022, total revenue from utility contributions was $100,059,255 and an additional $3,500,000 was added from Quad II carryover as required for Rural Programs for a grand total of $103,559,255[55].(PSC REF#: 370309.) Of the total annual collections, approximately $6.5 million is allocated for statutorily required and other oversight functions including: Compliance Agent (annual financial audit); Evaluation (independent evaluation); Fiscal Agent (utilities' financial management function); and Commission Staff. The other oversight function funded with these dollars is the Systems Database that stores all Focus program information on customer projects, savings estimates, and financial payments.[56]

This leaves approximately $97 million for the Focus Core energy efficiency and renewable programs; the Environmental and Economic Research and Development Program (EERD); the Program Administrator and the balance of $5 million required for Rural Programs.

[54] Municipal electric and electric cooperatives are required to collect an average of $8 per meter and either send it to Focus or operate their own Commitment to Community Programs. Currently, all 82 municipal electric utilities participate in Focus and 11 of the 24 cooperatives participate so total collections from these sources are approximately $3.4 million annually.

[55] The Commission ordered funding for Rural Programs totaling $34 million over the four years of Quad III. The Commission ordered that funding for Rural Programs come from three sources: 1) carryover from the 2017-18 rural broadband programs; 2) Quad II unallocated Digester funds ($5 million); and 3) reallocated dollars ($5 million per year) from the Core Efficiency programs.

[56] See the *2020 Annual Report to the Legislature on Energy Efficiency and Renewable Resources* for a detailed break- down of budgets. https://psc.wi.gov/Documents/Reports/2020ReportToLegislature.pdf

Essentially, the Core Energy Efficiency Budget is what remains after all of the other expenses are subtracted. Table 7 below shows this calculation for 2022.

Table 7: 2022 Focus Revenue and Expenses Calculations

Revenue	
IOU	96,859,255
Municipals and Cooperatives	$3,200,000
Quad II Carryover for Rural	$3,500,000
TOTAL	**$103,559,255**
Expenses	
Statutory/Oversight Functions	$6,500,000
TOTAL	**$97,059,255**
Focus Program Expenses	
Renewables	$5,500,000
Rural Programs	$8,500,000*
EERD	$100,000
Program Administrator	$7,162,200
Core Efficiency Programs	$75,797,055
TOTAL	**$97,059,255**

*Includes transfer of $5 million from Core Energy Efficiency Programs to Rural Programs

B. Renewables

The structure of the Renewables Program has been modified several times over the last two quadrenniums and during the quadrennial planning processes.[57] During Quad III, the Commission found it reasonable to make all solar photovoltaic (PV) projects prescriptive rather than having some of the larger sized projects apply for funds under the Renewable Energy Competitive Incentive Programs (RECIP). The Commission also found it reasonable to base incentive amounts for solar PV projects on system capacity rather than a percentage of total costs, and to cap the incentive amounts for systems with a capacity of 500 kilowatts (kW) or higher. Finally, the Commission directed the Program Administrator to periodically make adjustments to the incentive levels as installation costs change, using data collected by Focus on

[57] For decisions during Quad II see PSC REF#: 295733. For decisions during the Quad III planning process see (PSC REF#: 343909) and (PSC REF#: 349339).

installations receiving incentives, and for Commission staff to report to the Commission annually, commencing December 31, 2020, the costs of installation of solar PV systems and the updated prescriptive incentive amounts by capacity. (PSC REF#: 380465.)

Most recently, on October 21, 2021, the Commission determined to discontinue the RECIP process and replace it with the custom incentive approach used with the core energy efficiency programs beginning in 2022. (PSC REF#: 425397.)

Quad III Funding for Renewables

During the Quad III Planning Process, the Commission set a separate annual renewable budget for incentives only, capped at $5.5 million. Non-incentive costs for technical and customer support, application processing, proposal review, and incentive processing are taken from the Core energy efficiency budget. Instituting a cap on expenditures, particularly if there is a penalty for the Program Administrator if the cap is exceeded, typically leads to conservative budgeting practices and the entire amount ($5.5 million) not spent each year. Table 8 details prescriptive solar PV expenditures for the first three years of Quad III. Table 9 details expenditures for RECIP for the first three years of Quad III and Table 10 shows total renewable incentive and non-incentive expenditures for the first three years of Quad III.

Table 8: Prescriptive Solar PV Expenditures: 2019 -2021

Year	Sector	Incentives	Implementer Non-Incentives*[58]	Total Expenditures	Projects Completed	Average Incentive Payment
2019	Residential	$1,423,379	$256,208	$1,679,587	845	$1,684
	Rural Residential **	$199,981	$35,996	$235,978	175	$1,142
	Business	$231,236	$41,622	$272,859	73	$3,167
	Ag/Rural Business	--	--	--	--	--
	TOTALS	**$1,854,596**	**$333,826**	**$2,188,424**	**1,093**	**$1,697**
2020	Residential	$2,438,694	$438,964	$2,877,659	2,020	$1,207
	Rural Residential **	$399,049	$71,828	$470,878	574	$695
	Business	$1,261,127	$227,002	$1,488,130	159	$7,931
	Ag/Rural Business	$123,348	$22,202	$145,550	40	$3,083
	TOTALS	**$4,222,218**	**$759,996**	**$4,982,217**	**2,793**	**$1,512**
2021	Residential	$1,047,576	$188,563	$1,236,139	2,060	$508
	Rural Residential **	$330,000	$59,400	$389,400	660	$500
	Business	$1,749,992	$314,998	$2,064,990	201	$8,706
	Ag/Rural Business	$145,285	$26,151	$171,437	55	$2,641
	TOTALS	**$3,272,853**	**$589,112**	**$3,861,966**	**2,976**	**$1,100**

*Implementer non-incentive spending for renewables is not tracked separately from core programs, so an estimate is provided here.
**Rural and Ag PV offerings incentive spending is attributed to rural programs, but included here to show the full spend on solar PV.

[58] Implementer non-incentive cost estimates are based on the incentive/non-incentive split from Renewable Rewards in Quad II, layering in an estimated cost to implement the custom renewable offering in 2022. The non-incentive costs are approximately 18% of the total incentive budget ($5.5 million). Administrator non-incentive costs for application processing and incentive payments are approximately $385,000 annually and are not shown in the table.

Table 9: RECIP Project Expenditures 2019 - 2021

Year	Technology	Incentives	Implementer Non-Incentives*[59]	Total Expenditures	Projects Completed	Average Incentive Payment
2019	Solar PV	$2,675,231	$481,541	$3,156,773	65	$41,157
	Biogas	--	--	--	--	--
	GSHP**	$6,151	$1,107	$7,258	1	$6,151
	Wind	$5,685	$1,023	$6,708	1	$5,685
	TOTALS	**$2,687,067**	**$483,671**	**$3,170,739**	**67**	**$40,105**
2020	Solar PV	$389,356	$70,084	$459,440	17	$22,903
	Biogas	$132,169	$23,790	$155,959	2	$66,084
	GSHP**	--	--	--	--	--
	Wind	--	--	--	--	--
	TOTALS	**$521,525**	**$93,874**	**$615,399**	**19**	**$27,449**
2021	Solar PV	$79,353	$14,283	$93,637	4	$19,838
	Biogas	$156,923	$28,246	$185,169	1	$156,923
	GSHP**	--	--	--	--	--
	Wind	$33,689	$6,064	$39,753	1	$33,689
	TOTALS	**$289,965**	**$48,593**	**$318,559**	**6**	**$48,328**

*Non-Incentive spending for renewable offerings is not tracked separately from core programs, so an estimate is provided here.
**GSHP = Ground Source Heat Pump

Table 10: Total Renewable Expenditures 2019-2021

	2019	2020	2021	TOTALS
Prescriptive Solar PV Incentives	$1,854,596	$4,222,218	$3,272,853	**$9,349,667**
RECIP Incentives	$2,687,067	$521,525	$289,965	**$3,498,557**
INCENTIVE TOTALS	**$4,541,663**	**$4,743,743**	**$3,562,818**	**$12,848,224**
Prescriptive Solar PV Non-Incentives	$333,826	$759,996	$589,112	**$1,682,934**
RECIP Non-Incentives	$483,671	$93,874	$48,593	**$626,138**
NON-INCENTIVE TOTALS	**$817,497**	**$853,870**	**$637,705**	**$2,309,072**
GRAND TOTALS	**$5,359,160**	**$5,597,613**	**$4,200,523**	**$15,157,296**

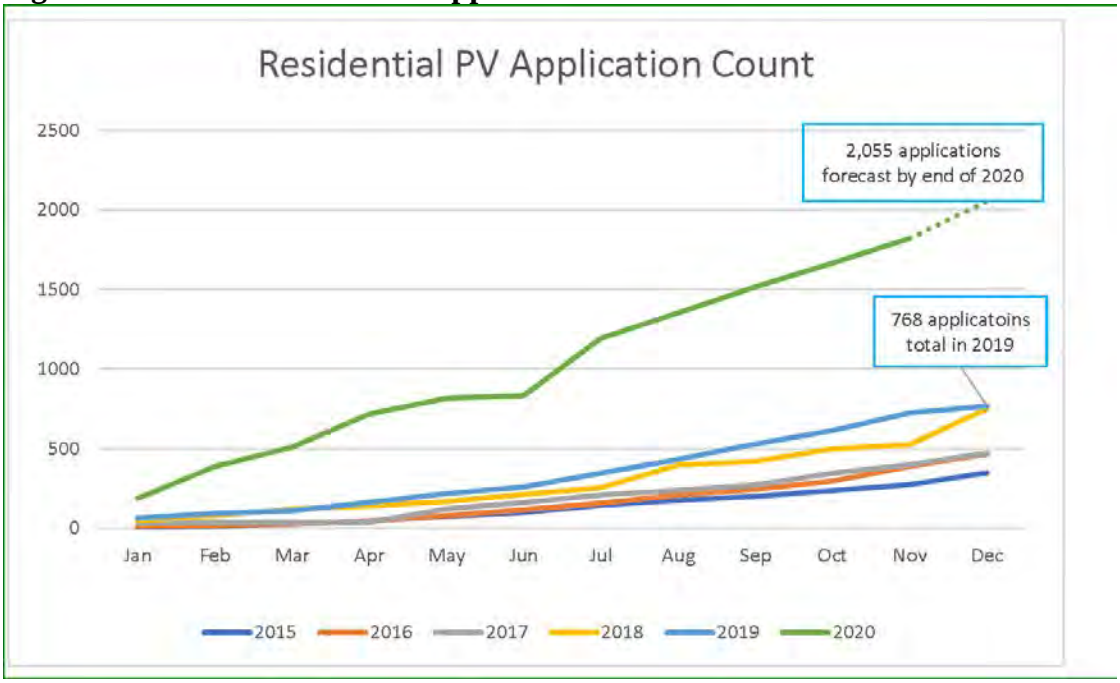
2020 Solar PV Demand and Incentives

2020 was a record year for residential solar PV participation. The Federal Investment Tax Credit (ITC), along with highly motivated new solar installers in the state contributed to the

[59] Implementer non-incentive cost estimates are based on the incentive/non-incentive split from Renewable Rewards in Quad II, layering in an estimated cost to implement the custom renewable offering in 2022. The non-incentive costs are approximately 18% of the total incentive budget ($5.5 million). Administrator non-incentive costs for application processing and incentive payments are approximately $385,000 annually and are not shown in the table.

increase. COVID-19 has not slowed residential solar PV demand but appears to have slowed installations on the business side to a certain extent. The chart below shows residential PV demand from 2015 through 2020 and demonstrates the growth of the program during this timeframe.

Figure 9: Residential Solar PV Application Count: 2015-2020



In an effort to address the increased demand, APTIM reduced residential PV incentives per kW and the overall cap effective June 1, 2020. However, demand continued to increase throughout the summer which prompted APTIM to present alternative incentive levels to Commission staff for consideration. Amidst record high demand, APTIM needed to lower the incentive amount or risk a penalty for exceeding the $5.5 million renewables budget ceiling in its contract with SEERA. [60]

[60] (PSC REF#: 374855), SEERA-APTIM Contract 2019-2022, p.33, section 5.8.

Given that the Commission gave the Program Administrator authority to adjust renewable incentives in Quad III, the Program Administrator, in consultation with Commission staff, reduced the maximum incentive for Residential installations to $500 beginning August 15, 2020. (PSC REF#: 343909.) The $500 incentive has been in place since then. Table 11 below shows the maximum incentives and associated dollars per kW at the beginning of 2020 and after the change became effective in August.

Table 11: Solar PV Incentives January 2020 and August 2020

January 2020 Incentive Table

System Size		$/kW (DC)	Max Incentive
0	5	$300.00	$1,500.00
5	10	$200.00	$2,500.00
10	100	$150.00	$16,000.00
100	300	$120.00	$40,000.00
300	500	$100.00	$60,000.00
500+		$0.00	$60,000.00
		Residential Cap	$1,500.00

Updated 2020 Incentive Table

System Size		$/kW (DC)	Max Incentive
0	5	$200.00	$1,000.00
5	10	$150.00	$1,750.00
10	100	$125.00	$13,000.00
100	300	$100.00	$33,000.00
300	500	$85.00	$50,000.00
500+		$0.00	$50,000.00
		Residential	$500 per system

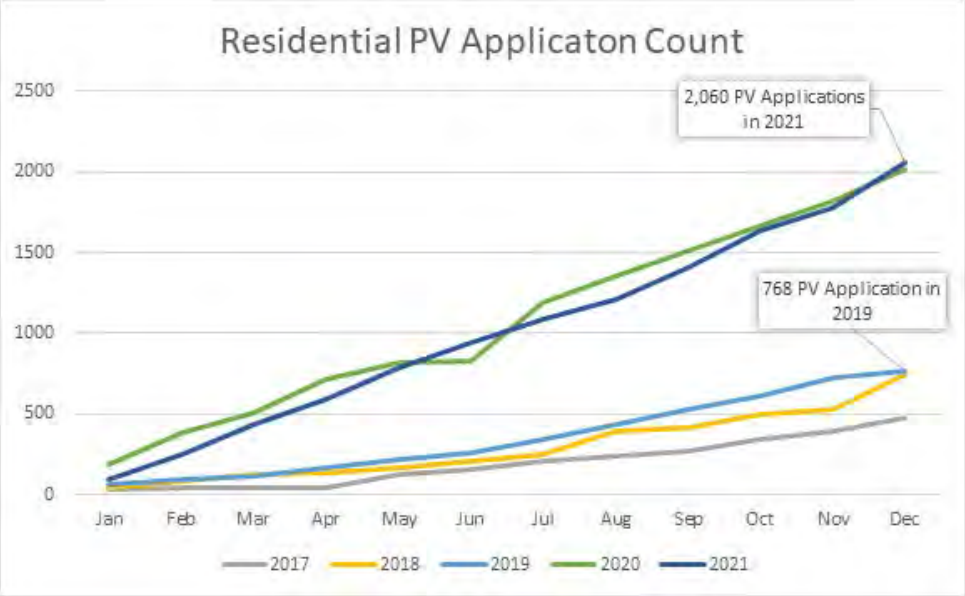
As noted above, the ITC is a large driver of solar PV projects in the state. The ITC has existed since 2006 but was scheduled to step down during Quad III, from 30 percent in 2019, 26 percent in 2020, 22 percent in 2021, and finally phase out entirely by 2022. This phase out of the ITC motivated many customers to adopt solar PV while the credit was still available. The federal omnibus spending and COVID relief bill[61] signed into law on December 27, 2020 changed the original ITC phase out schedule. With that bill, both residential and commercial customers could receive a 26 percent tax credit in 2021 and through the end of 2022. Both will be eligible for a 22 percent ITC in 2023. In 2024 and beyond, residential customers will no

[61] Consolidated Appropriations Act, 2021, 116th Cong., H.R. 133, 2d Sess. (2020) (enacted). https://www.congress.gov/bill/116th-congress/house-bill/133/text

longer be eligible for the tax credit, while commercial customers can expect a 10 percent ITC indefinitely.

Going into 2021, the Program Administrator had been anticipating very high participation, given that it was supposed to be the last year of the ITC for residential customers. Though the dynamic changed somewhat with the extension at the end of 2020, participation remained high in 2021 as many installers had a backlog of residential customers who were hoping to get their systems installed before the original step-down from 26 percent to 22 percent. As shown in Figure 10, a total of 2,060 residential solar PV projects were completed through the program in 2021.

Figure 10: Residential Solar PV Application Count: 2017-2021



Nearly 100 Focus Trade Allies completed residential solar PV projects in 2021. Additionally, 660 projects were also eligible for rural bonuses resulting in 73 percent of the allocated incentive budget for rural renewable energy bonuses being spent. Despite the high number of solar PV installations, the Residential Renewable Rewards offering was unable to achieve its goals due to a shortage of Trade Ally labor, scheduling delays, and delays in utility

inspections which require state inspectors (of which there are three statewide and the demand on them was high).

The Business Renewable Rewards offering saw a total of 201 solar PV projects completed in 2021 resulting in lifecycle MMBtu savings achievement of 60 percent of the savings goal using 55 percent of the allocated incentive budget. A total of 55 agriculture customers were able to take advantage of the rural agriculture renewable bonus resulting in 61 percent of the allocated rural renewable energy bonus incentive budget being spent. While overall there was an increase in solar PV projects for business customers in 2021 compared to previous years, savings and incentives fell short of annual goals. Similar to the Residential Renewable Rewards offering, contractors were unable to complete enough installations to meet goals due to labor shortages, delays in scheduling installations because of COVID, delays in utility inspections, and supply chain issues impacting the ability to get product needed to complete larger jobs.

The Special Sector Solar offering, which targets schools, governments, non-profits, and tribal nations who do not qualify for the federal Solar ITC, launched in the fall of 2021. Twenty-three projects were completed using these incentives in 2021, and 20 projects are already reserved for 2022.

Program Considerations – Efficiency and Renewable Program Budgets

As previously mentioned, Focus has historically had separate budgets for energy efficiency and renewable programs. Previously, it was more in recognition of the higher costs associated with solar PV and other renewable technologies compared to energy efficiency measures. More recently as costs of solar PV have dropped dramatically, it has become more of a ceiling for dollars spent on renewable technologies. However, since the beginning of Quad III,

having separate core and renewable budgets has been challenging for the Program Administrator to manage and has become administratively burdensome. Furthermore, since the $5.5 million dollars is for renewable incentives only, the Core Energy Efficiency budgets have been reduced to pay for the estimated non-incentive costs as shown in Tables 8, 9 and 10. Also, as mentioned previously, a separate, capped budget restricted only to renewable incentives, guarantees that there will be unspent budget at the end of every year since the contract between SEERA and the Program Administrator penalizes the Program Administrator if the budget is exceeded. "Excess" funds cannot be transferred to core programs so they carry over into the next year. As a result, the full $5.5 million is not spent annually on renewable incentives even when demand is high.

From the standpoint of administering and implementing the Focus program, renewable measures do not differ from efficiency measures in that they all contribute savings towards the Focus energy savings goals. However, having to formally manage, track, and report on separate budgets for energy efficiency measures and renewable energy measures and also respond to demand increases and change incentive levels, creates additional administration costs. In addition, there have been specific instances where projects blur the division between energy efficiency and renewable energy, creating confusion about whether such projects should be funded from a Renewables budget or from the Core Energy Efficiency budget.

Furthermore, static, four-year budgets leave little flexibility for program delivery and make it difficult to adjust incentive levels and budgets based on changing market needs as has been demonstrated in the last several years. The Commission acknowledged the changing market during the Quad III Planning Process. In 2018, the Commission determined that the Program Administrator should have the flexibility to adjust budgets within the renewable program, that is, between the business and residential renewable portfolios and between RECIP

and prescriptive programs as the market dictates. (PSC REF#: 343909 at 10.) However, this decision did not address flexibility between Core Energy Efficiency and Renewables budgets.

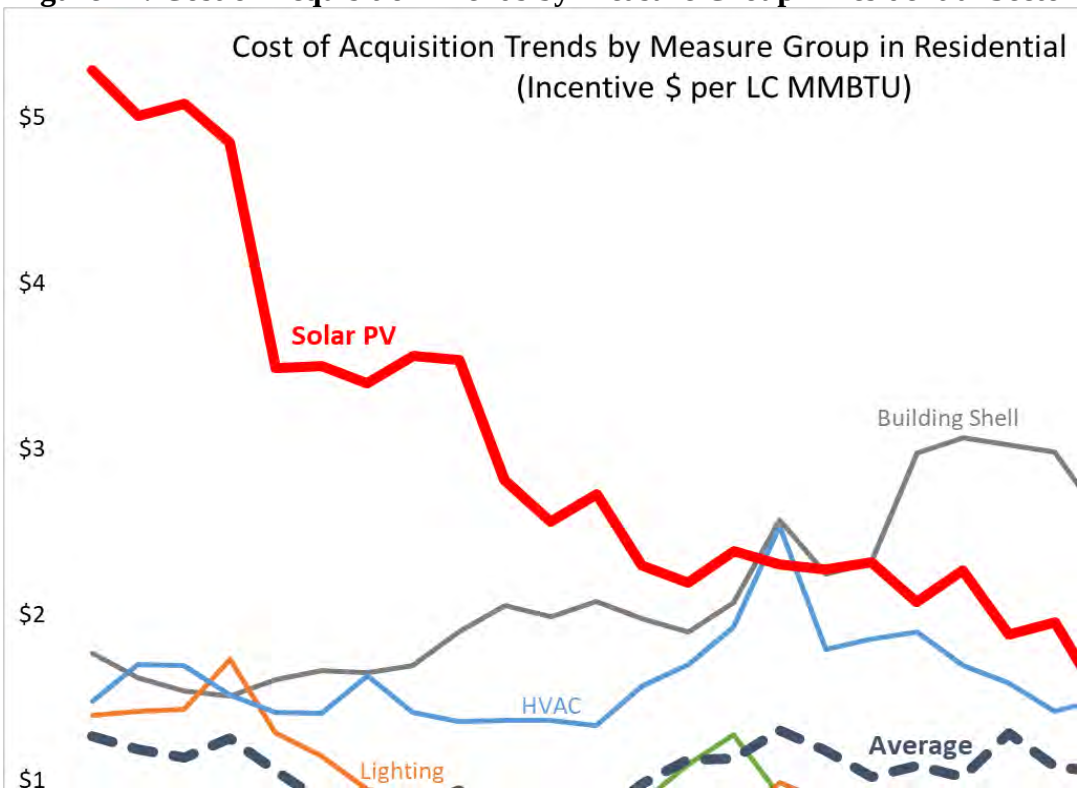
The market continues to create uncertainty for program planning. For example, the Federal ITC continues to be a driving factor for renewables projects and the shifting sunset timeline for the tax credit has been a challenge. Another marketplace component is the Trade Allies. Based on a May 2022 survey of renewable Trade Allies, the majority of respondents indicated they are actively trying to expand or plan on expanding in the next few years as demand dictates. However, about 77 percent of those surveyed indicated difficulties finding qualified candidates.[62] All of these market issues affect the renewable programs that Focus offers. Furthermore, the current structure with separate Core Energy Efficiency and Renewables budgets and the approval processes for making changes, make it difficult for the Program Administrator to adjust in a timely manner.

Analysis conducted by the Program Administrator demonstrates that renewable energy measures have reached incentive-only cost of acquisition parity with energy efficiency measures due to evolving incentive levels. In the residential portfolio, the incentive cost of acquisition for solar PV is lower than most other measure categories (see Figure 11 below). Lowering of incentives for solar PV over the last few years has caused the cost of acquisition to decrease sharply, but it has also increased freeridership. For example, prior to the decrease in solar PV incentives for residential customers in mid-2020, the Focus Evaluator calculated residential solar PV freeridership at 40 percent.[63] Updated analysis for the calendar year 2021 program

[62] APTIM survey of Renewable Trade Allies, May 2022.
[63] Cadmus. 2020. *Focus on Energy Calendar Year 2019 Evaluation Report Volume II*. Accessed from: https://www.focusonenergy.com/sites/default/files/inline-files/WI_Focus_on_Energy_CY_2019_Volume_II_022521.pdf.

evaluation shows that freeridership had increased to 58 percent, based on customer self-reporting.[64]

Figure 11: Cost of Acquisition Trends by Measure Group – Residential Sector



Commission Alternatives –Renewables Budgets

While Focus goals and other program KPIs will be set in Phase III, it is beneficial for the Commission decide the issue of Renewable budgets in Phase II – even if it is in the form of a KPI. This is because the budget amounts for renewables could impact goal setting for energy and demand goals in Phase III and having this information in advance will aid in developing alternatives for Phase III.

[64] Cadmus. 2022. *Focus on Energy Calendar Year 2021 Evaluation Report: Volume II Program Evaluations.* Accessed from: https://focusonenergy.com/sites/default/files/inline-files/WI_Focus_on_Energy_CY_2021_Volume_II.pdf.

Alternative One maintains the separate $5.5 million annual spending cap for Renewables. This alternative is appropriate should the Commission determine the amount is sufficient for renewable spending and it wants to maintain separate Renewable and Core Energy Efficiency budgets. Sub-Alternative A would keep the $5.5 million annual budget for incentives only with the estimated implementer non-incentive costs of $990,000 and estimated Program Administrator costs of $385,000 taken from the Core Efficiency budget. Should the Commission want all of the renewable costs (i.e., incentive and non-incentive costs) to come from the $5.5 million Renewables budget, it could choose Sub-Alternative B. Sub-Alternative C directs the Program Administrator to support workforce development in the Wisconsin renewable energy industry by proposing a KPI seeking to address the statewide renewable workforce shortage for the Commission's consideration in Phase III of the Quad IV Planning Process. The KPI could relate to increasing the number of participating Trade Allies for example. This sub-alternative, may be appropriate if the Commission wants Focus to play a role in addressing the renewable workforce shortage in the state.

Alternative Two is appropriate should the Commission want to choose a different funding level for renewables – either higher or lower - based on the spending trends and information presented in the memo. Sub-Alternative A would keep these dollars for incentives only with implementer and Program Administrator non-incentive costs taken from the Core Efficiency budget as is the current practice. If the Commission wants all of the renewable costs to come from the revised budget amount for renewables, it should choose Sub-Alternative B. Alternative Two would be appropriate if the Commission wants to maintain separate Renewables and Core Energy Efficiency budgets but change the overall amount. The purpose of and reasons for supporting a choice of Sub-Alternative C are the same as those discussed above.

Alternative Three is appropriate should the Commission want to move to a four-year maximum budget KPI and give the Program Administrator the flexibility to shift funds between Renewable and Core Efficiency budgets after receiving approval from Commission staff. Total renewable expenditures over the quadrennium should not exceed the maximum budget KPI. The KPI would still serve as a not-to-exceed amount for renewables, but would provide more budget flexibility in years where demand for renewables underperforms relative to the renewables budget KPI by allowing the Program Administrator to shift dollars from Renewables to Core Energy Efficiency programs with high demand. Renewable measures and associated incentive spend could be tracked in SPECTRUM without setting up separate programs and associated coding and administrative complexity which currently exists. The Program Administrator and Implementers can monitor the renewables incentive spend via a dashboard or similar method to ensure it does not exceed the KPI. In addition, the Program Administrator could continue to provide the Commission with a required report on the current market for renewables. This four-year approach would be consistent with the Commission's decision in March 2022 to move from an annual budget carryover process to once per quadrennium carryover approval to better align four-year budgets with four-year goals. (PSC REF#: 433746.) The Commission would have to specify whether the KPI maximum is for both incentives and non-incentive costs or just incentives as with the other alternatives (Sub-Alternatives A and B respectively). Sub-Alternative C would set a four-year maximum budget KPI of $22 million which the same as it was for Quad III, while Sub-Alternative D would have the Commission set a different four-year budget KPI. The purpose of and reasons for supporting a choice of Sub-Alternative E are the same as those discussed above.

Should the Commission not want to set a spending maximum for renewables but allow the Program Administrator to allocate funding as necessary to meet the Commission's ordered and contractual goals, it could choose Alternative Four. This alternative presumes that statutorily required spending stays in place such as the ten percent set aside for local governments and agricultural producers as well at the current Commission policy requiring 60 percent of Focus dollars allocated to Business Programs and 40 percent for Residential Programs. This option is presented since as Figure 11 shows, the residential portfolio incentive cost of acquisition for solar PV is currently lower than most other energy efficiency measure categories.

Alternative One: Allocate $5.5 million annually for renewables

Sub-Alternative A: $5.5 million is for incentives only, non-incentive costs taken out of Core efficiency budget.

Sub-Alternative B: $5.5 million is for incentive and non-incentive costs.

Sub-Alternative C: Direct the Program Administrator to propose a renewable energy workforce development KPI for the Commission's consideration in Phase III of the Quad IV Planning Process.

Alternative Two: Allocate a different annual dollar amount for renewables based on the Commission's discussion.

Sub-Alternative A: The allocated amount is for incentives only, non-incentive costs taken out of Core efficiency budget.

Sub-Alternative B: The allocated amount is for incentives and non-incentive costs.

Sub-Alternative C: Direct the Program Administrator to propose a renewable energy workforce development KPI for the Commission's consideration in Phase III of the Quad IV Planning Process.

Alternative Three: Set a four-year maximum budget KPI to give the Program Administrator the flexibility to shift funds between the Renewable and Core Efficiency budgets after receiving approval from Commission staff. Total renewable expenditures over the quadrennium shall not exceed the maximum budget KPI.

Sub-Alternative A: The maximum budget KPI is for incentives only, non-incentive costs are to be spent from the Core Efficiency budget.

Sub-Alternative B: The maximum budget KPI is for incentive and non-incentive costs.

Sub-Alternative C: Set a four-year maximum budget KPI of $22 million.

Sub-Alternative D: Set a four-year maximum budget KPI that is consistent with the Commission's discussion. .

Sub-Alternative E: Direct the Program Administrator to propose a renewable energy workforce development KPI for the Commission's consideration in Phase III of the Quad IV Planning Process.

Alternative Four: Do not set a spending maximum for renewables and allow the Program Administrator to allocate funding as necessary to meet the Commission's goals as long as spending aligns with Focus' statutory obligations and Commission policies.

C. Underserved Rural and Other Customers

Background

During the second quadrennium, the Commission established a rural broadband program. Rural was defined as customers living in zip codes of the state that were defined primarily as rural by the Census Bureau and those customers eligible to receive benefits under the federal broadband Connect America Fund II (CAF-II) and the Alternative Connect America Cost Model (ACAM) programs.[65] (PSC REF#: 295733.)

When the Commission decided to continue a rural Focus program during Quad III planning, rural customers continued to be defined as all agricultural or customer sites in the 582 zip codes defined as eligible for the 2017-18 Rural Broadband Programs.

In its Final Decision dated June 6, 2018, the Commission directed the Program Administrator to work with Commission, and the Wisconsin Departments of Natural Resources and Agriculture, Trade, and Consumer Protection staff, to design a new set of proposed programs to serve agricultural customers and other rural customers in the 2019-2022 quadrennium, and provide proposed programs to the Commission by July 1, 2018. (PSC REF#: 343909.) The Commission directed that these programs should remain in the current portfolios but be tracked separately from Core program offerings. Funding for the programs would come from three sources; 1) $5 million in unobligated digester funds, 2) any surplus funds from the 2017-2018 rural broadband pilot programs, and 3) an additional $5 million per year from the Core energy efficiency programs. The Program Administrator presented four different rural program

[65] To document the level of service, Commission staff collected address data for all Focus participants in 2014 and 2015, mapped those addresses to census blocks, and compared Focus participation in census blocks served by CAF-II and ACAM to 8 census blocks elsewhere in the state. The analysis focused on participation in Focus programs for single-family residential homes, in part because comparing participation in Focus business programs can be heavily affected by the location of a limited number of large energy customers who receive large incentives. Census blocks identified as served by nonparticipating cooperatives, which encompass about 7 percent of total statewide population, were excluded from the analysis.

packages for consideration, with each emphasizing a different customer segment or theme with budgets in the $8.5 million range. The Commission found it reasonable to approve a balanced alternative targeting Agriculture and Industrial sectors with corresponding estimated budget amounts in Table 13. (PSC REF#: 349339.)

Table 13: Quad III Estimated Rural Programs and Budgets

Program Area	Budget
Agriculture	$3.1 million
Industrial	$3.0 million
Residential/Other Business	$1.9 million
General Support & Engagement	$500,000
Propane Offering	$300,000
TOTAL (2019)	**$8.8 million**

This alternative emphasized incentives for agricultural measures such as more efficient motors and facility lighting-technologies which are used by different types of farms; increased funding for a competitive proposal process designed to identify the most cost-effective industrial projects in rural areas; and increased funding for industrial staffing support programs, which industrial customers have indicated provide helpful support for ongoing efficiency work. (PSC REF#: 341146.) This alternative also maintained aspects of the other options that were presented to the Commission for consideration such as funding for residential and other business customers (besides Industrial customers). This new alternative also provided incentives for the more efficient use of propane through a partnership with the Commission's Office of Energy Innovation (OEI) using State Energy Program (SEP) funds from the U.S. Department of Energy (DOE). Focus cannot provide incentives for propane-powered technologies since funding for the program is collected from electric and natural gas utilities. This results in a significant gap in program offerings for rural customers, particularly in the agricultural segment. To provide incentives for propane measures, SEP provided up to $300,000 in 2019, and additional dollars in subsequent years. OEI has conducted research on which measures could be included and two

examples are more efficient propane grain dryers, and the conversion of irrigation systems from diesel to propane. (PSC REF#: 349339.) [66]

Based on estimates of 2018 carryover, the Commission directed that $34 million be dedicated to the Rural programs in Quad III. (PSC REF#: 349339.) Once the 2018 carryover was known, funding sources for the four-year Rural program included: 1) $9 million from 2018 carryover; 2) $5 million of unallocated digester dollars; and $5 million to be reallocated annually from Core efficiency programs ($20 million total) for a total of $34 million over Quad III. (PSC REF#: 370309.) It is important to note that $14 million of the total $34 million allocated to rural budgets was from two funding sources that are no longer available.

Results of Rural Program Efforts

As mentioned above, customer eligibility in Focus' Rural Program was determined using a U.S. Census Bureau definition of rural populations translated into a list of rural-eligible zip codes statewide. Based on the Census Bureau definition and the corresponding program assignment of rural or non-rural by zip code, it was found that 36 percent of the state's population live in the state's 582 rural-eligible zip codes. Data presented in Table 14 below summarizes Focus' incentive spending in rural zip codes since 2015. These data shows two different splits, the first with all spending for residential and business programs including upstream (i.e., retail store) lighting incentives and the second showing only residential programs, again with upstream lighting incentives included.[67]

[66] An additional $435,000 was added for propane measures since the original agreement was signed.(PSC REF#: 392202.)

[67] Focus' upstream lighting program offers retail markdowns for efficient lighting products. While purchase location is known, the program does not collect data on the installation location of the products incentivized through the program. Focus has developed an algorithm to assign these savings to a location based on the purchase location, however, there is uncertainty as to the precise location of product installation.

Both the All Spending and Residential Spending data presented in Table 14 show there was an increase in incentives received by customers in rural zip codes beginning in 2018, with both being in proportion to rural population size (35 percent in the All Spending category and 36 percent in the Residential Only category). The data also shows that spending across rural and non-rural in the All Spending category dropped in 2020 and 2021 when COVID-19 impacted Focus participation. When looking at Residential Only spending in 2020 across rural and non-rural, both had an increase from 2019 levels, but both levels also dropped in 2021. The increase in 2020 aligns with data showing a large increase in Focus online market place sales and in the number of efficiency packs ordered. This has been attributed to residential customers taking a closer look at their energy use when spending increased amounts of time at home during the pandemic.

Table 14: Rural & Non-Rural Incentives Per Capita Comparison Between 2015 - 2021

Year	All Spending			Residential Spending (Core & Rural)		
	Per Capita			Per Capita		
	Rural	Non-Rural	% Spend Rural	Rural	Non-Rural	% Spend Rural
2015	$10.05	$11.51	33%	$2.40	$4.75	22%
2016	$7.87	$12.41	26%	$2.28	$4.71	23%
2017	$8.17	$10.74	30%	$2.30	$4.50	22%
2018	$14.06	$12.34	39%	$6.49	$4.74	44%
2019	$11.38	$11.78	35%	$3.19	$3.72	33%
2020	$8.91	$10.39	33%	$3.53	$3.98	34%
2021	$7.94	$9.68	32%	$2.95	$3.45	33%
Avg. Pre-Rural Emphasis	**$8.70**	**$11.58**	**30%**	**$2.33**	**$4.49**	**22%**
Avg. Post-Rural Emphasis	**$10.57**	**$11.05**	**35%**	**$4.04**	**$3.97**	**36%**

The figures below represent the above data. Both figures, the All Spending and the Residential Spending graph, show the average increase in rural incentives between 2018 and 2021.

Figure 12. Per Capita Incentive Spending – All Spending in Rural Areas

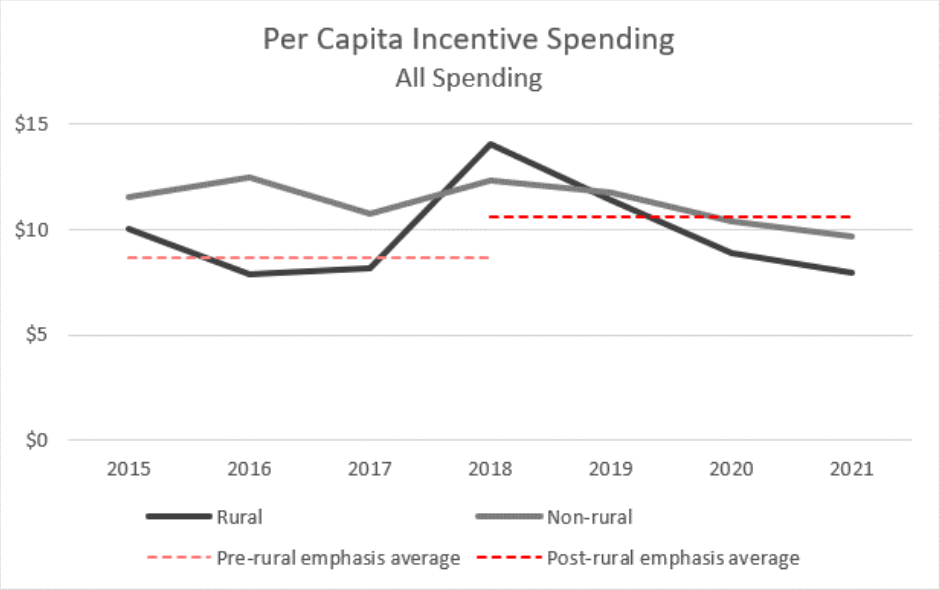
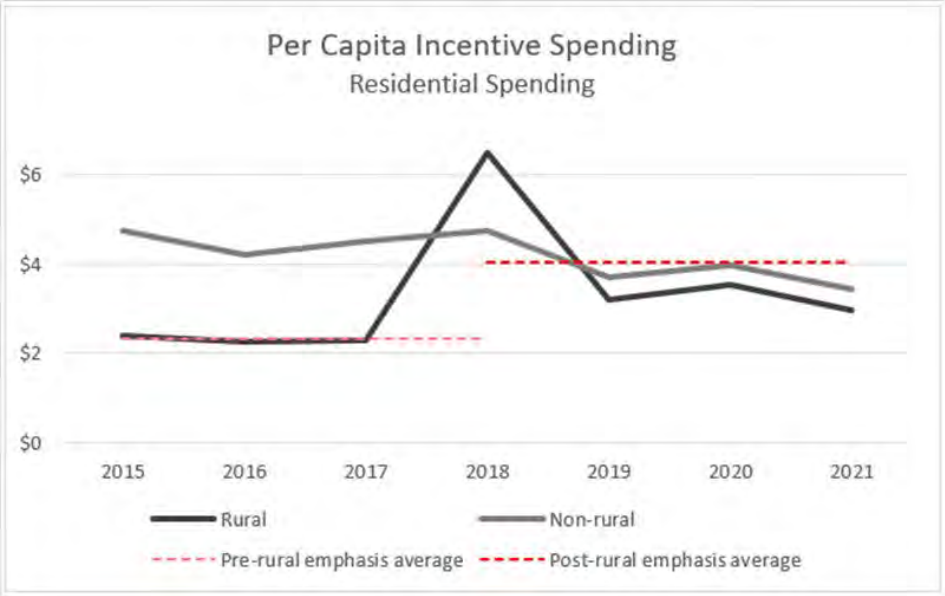


Figure 13. Per Capita Incentive Spending – Residential in Rural Areas



Program Considerations – Rural and Underserved Customers

While the increased focus on rural customers has had the intended effect (i.e., rural customers are getting incentives from Focus in proportion to their percentage of the total population of Wisconsin), the interplay between Core and Rural Programs has proven to be somewhat complex. Customers in rural zip codes are also eligible for statewide offerings funded

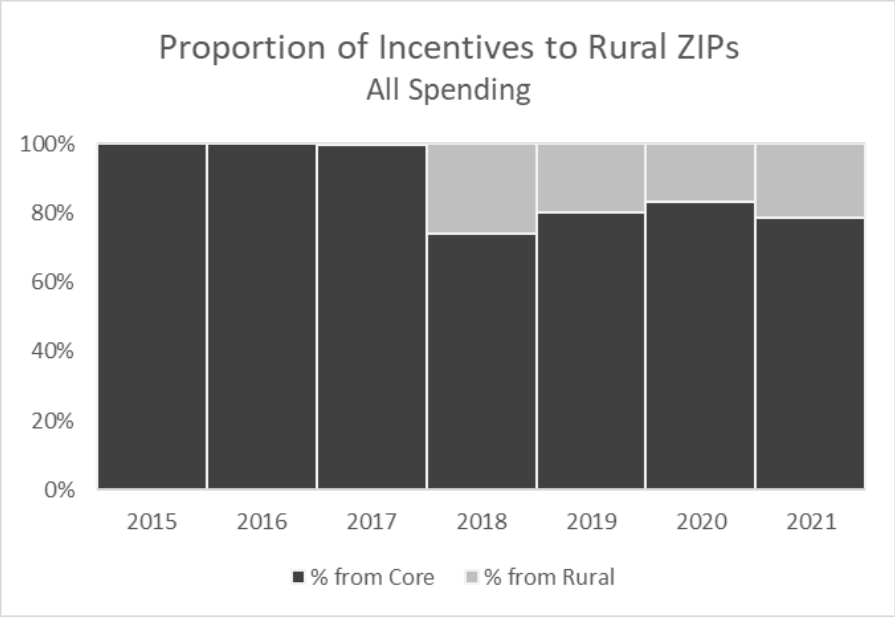
out of the Core budget. While Core Programs are not specifically targeted to rural customers, they are an important piece of the overall benefits these customers receive and can serve to enhance opportunities for program benefits to rural customers. Planning for and tracking separate budgets for Rural Programs and Core Programs while efforts under both programs provide benefits to rural customers can create confusion in stating Focus' overall impact in these parts of the state and can lead to complexities in accounting for program spending in these areas. For example, increased marketing of rural offerings and participation in rural offerings has led to increased uptake of Core offerings in the rural zip codes. Also, one of the initial offerings available in rural areas was a "connected kit" which included measures that were broadband connected (such as "smart" lighting), in addition to vouchers for discounted broadband service. After the introduction of the connected kit program in 2018, the similar, but more cost-effective core kit program experienced surge in participation in rural areas. Rural customers account for 36 percent of the state's population but have represented 46 percent of the participants in the core kit offering. This alone accounted for $400,000 in incentives from the Core Efficiency budget being spent in rural zip codes.

Another example of Core budgets being spent more heavily in rural zip codes is in the Rural Industrial Program. The Rural Programs budget is $8.5 million for each year of the quadrennium. Of this, the Industrial portion specifies funding only for staffing grants and a Large Customer request for proposals. All rural zip code incentives for measures installed at customer sites are paid from the Core budget. In 2019, industrial projects in rural eligible zip codes accounted for 38 percent of the total savings from all statewide industrial customers and 40 percent of the statewide industrial incentive spend. Of the rural industrial savings, 17 percent

came through the rural program; the remaining 83 percent was funded with incentives from the Core budget.

Figure 14 below shows that for the All Spending category, Core programs paid for between 74% – 83% of incentives in the eligible rural zip codes. While this is effective in terms of getting program incentives to targeted rural customers, it makes it difficult to plan for and manage separate categories of funds across a statewide program. Considerable administrative time is spent to ensure that the programs and funds prescribed by the Commission are being delivered and spent as intended. Should the Program Administrator want to propose a change to the program offerings or budget, the request has to go before the full Commission which takes additional time and delays implementation.

Figure 14: Proportion of All Incentives from Core and Rural Funding



Commission Alternatives – Rural and Underserved Customers

If the Commission decides that the Focus programs should target certain underserved customers during Quad IV, this could be done in a number of ways. Alternative One would be to continue the current Rural Program with an equal emphasis on industrial and agricultural

customers with some residential programs with a dedicated annual budget in the $8 million range. However, there will not be undesignated funds available in similar amounts to Quad III ($14 million). Therefore, any dollars above the $5 million that were being reallocated in Quad III, would reduce the Core Energy Efficiency budget and potentially the Renewables budget as well. Given the administrative challenges related to the creation of a dedicated budget as discussed above, there are other ways to target a specific customer group. For example, Alternative Two could establish a KPI where incentives are targeted in proportion to the percentage of a particular population. The discussion of Focus' Rural Program results above showed that customers in the rural zip codes represented 36 percent of Wisconsin's population, and that between 2018 and 2021, incentives received by rural customers were in proportion to their share of the overall population.[68] This benchmark was used to gauge the impacts of Focus' increased emphasis in reaching rural customers in the state, but was not a formally established measure of the program's performance. To get even more specific, the Commission could decide whether a KPI targeting incentives in proportion to population should apply only to Residential Program spending or include Business spending as well. As Table 14 depicted above, there was a difference in the per capita incentive amount received between the two categories. If KPI applied to both Residential and Business, it would give the Program Administrator more flexibility to make changes between standard Core energy efficiency offerings and those with specific KPIs. The program can monitor the target incentive spend and deliver program opportunities to boost participation where needed. Finally, establishing a quadrennium KPI target rather than annual targets would allow even greater flexibility for the program to achieve other Quad IV objectives.

[68] An analysis of the 2020 census numbers shows the estimated rural customers continue to represent a similar proportion of the statewide population (between 30-35 percent).

Alternative Three is appropriate if the Commission prefers to take a broader view of "underserved" customers (rather than just rural) to examine other customer classes that may not be receiving incentives in proportion to their contributions to Focus. There are several customer groups that have traditionally been referred to as underserved by Focus or other energy efficiency programs including: small businesses and income-qualified customers.[69] For example, several stakeholders in Phase I stated their belief that Focus should do more with income-qualified or low-income customers and some specifically mentioned that examining energy burden would be one way to identify and target this group. (PSC REF#: 434025 and PSC REF#: 434231.) The DOE's Low-Income Energy Affordability Data (LEAD) Tool is one resource the program could use to identify potential areas to target Focus offerings (see Figure 15 below).[70] In addition, the Commission has several ongoing initiatives related to energy burden and the results of these efforts could be useful for Focus' data gathering efforts. For example, the Commission began to require that IOUs report on energy burden for the 2020 annual report. The latest reports for 2021 were filed recently and can be found on the Commission's website.[71]

Commission staff is also currently receiving technical support via the DOE's Grid Modernization initiative where a team of researchers from national labs are conducting research and options to improve the Commission's ability to standardize the data it collects for more robust analyses for decision making. Related to this, the Commission approved using $50,000 of

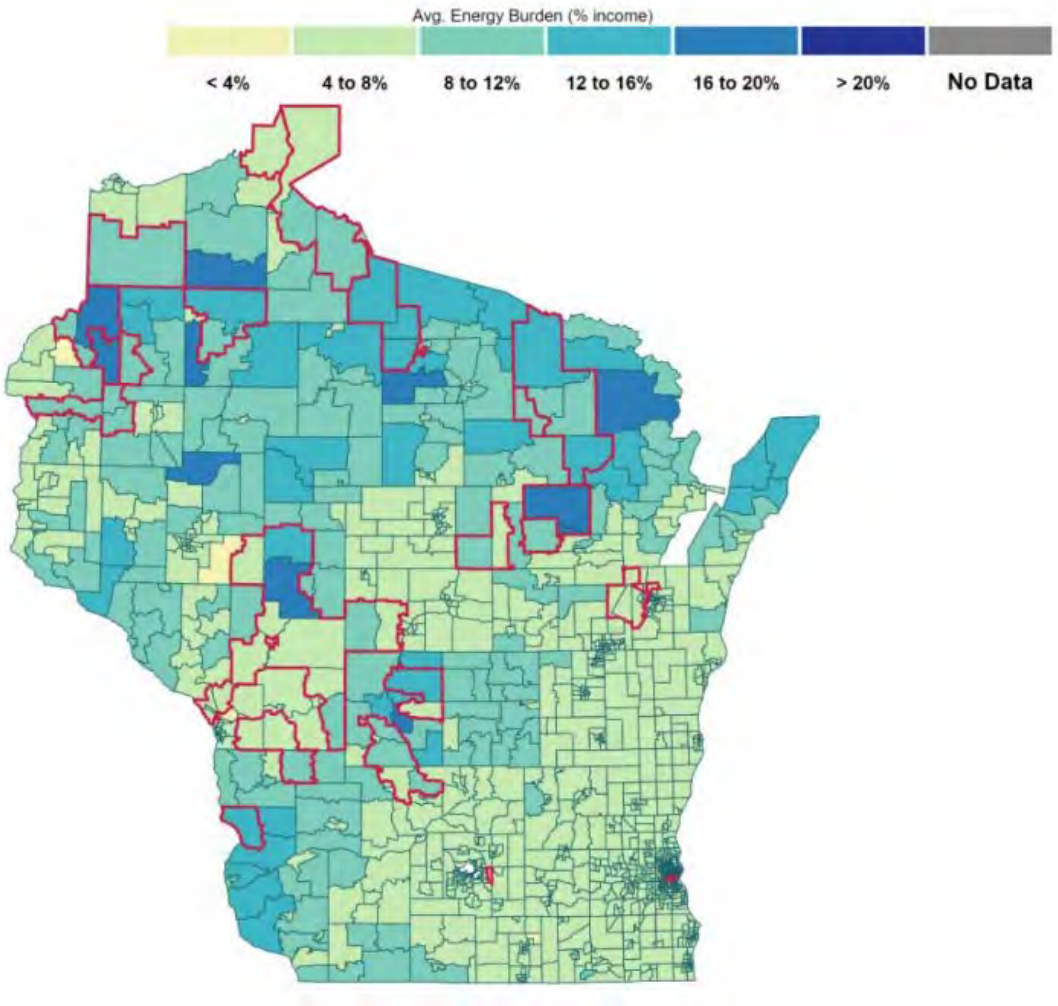
[69] ACEEE Summer Study on Energy Efficiency in Buildings, *Targeting Small Businesses--The Search for 80/20 in the 20/80 World.* August 2016.
[70] DOE Low-Income Energy Affordability Data (LEAD) Tool https://www.energy.gov/eere/slsc/low-income-energy-affordability-data-lead-tool
[71] PSC - IOU Annual Reports (wi.gov)

federal SEP funds for the 2022 program year for an Energy Burden Action Study once the DOE's Grid Modernization initiative results have been received.[72]

Resources such as these may be particularly useful since Focus does not collect information on customer income within its Direct to Customer programs and therefore does not have the capability to develop an accurate baseline of the amount of incentives going to customers at particular income levels. Regardless of the underserved customer group the Commission may want to target, the program would need to perform data collection and analysis to determine how its current programs and offerings are serving these customers and how programs could adapt to target program offerings going forward. During Phase I, the Commission directed the Program Administrator to convene a stakeholder group that includes community-based organizations that work with marginalized communities to gather input on effective methods to reduce barriers in order to effectively reach these customers. Information gathered in this forum could be also used to inform program offerings.

[72] PSC REF#: 438977.

Figure 15: Energy Burden for Low- to Moderate-Income Customers with Utility Gas or Electricity as the Primary Heating Source



Source: U.S. Department of Energy Low-Income Energy Affordability Data Tool. Notes: Includes households from 0 to 80 percent of State Median Income primarily using utility gas or electricity for heating. Red outlines indicate tribal areas.

The Wisconsin Local Government Climate Coalition's (WLGCC's) Phase I comments supported program efforts to better understand which customer segments are underserved. PSC REF#: 434059.) The WLGCC also encouraged the Commission to work with the Program Administrator to set KPIs around program participation for all underserved populations—low income customers as well as other underserved populations. Once it is determined which populations or segments are underserved, an appropriate KPI for Quad IV might be to increase

program participation in key segments by 10-15 percent, for example. Rather than prescribing how the Focus program achieves that KPI, the WLGCC recommend that the Commission let the Focus team develop strategies to hit the identified KPIs.

The WLGCC went on to say that rather than prioritizing programs for households at a set income level, it would prefer that Focus design and implement more initiatives that assist census tracts with high energy burdens, that target highly inefficient buildings (including mobile homes), or that partner with community-based organizations (food banks, etc.) who already serve targeted populations.

Likewise, the Commission could determine that it wants the Program Administrator to collect data and analyze other potential underserved customers for targeted program offerings such as small businesses. Given that underserved customer programs typically have higher delivery costs, it may not be reasonable to assume that Focus could target program offerings to multiple segments of underserved customers. The topic of cost-effectiveness related to varying delivery costs is contemplated below. It should be noted that the Program Administrator in consultation with Commission staff, proposed to offer a small business program with 2021 carryover dollars beginning in 2023. The Commission approved the proposal at the open meeting on June 16, 2022.

Alternative One: Status Quo. Continue the current rural program with an equal emphasis on industrial and agriculture with some residential programs and an annual budget of $8 million.

Alternative Two: Develop a KPI to target the percentage of incentive spend that is proportional to the percentage of eligible rural customers in designated zip codes.

Alternative Three: Direct the Program Administrator to gather additional data and conduct further analysis during the first year of Quad IV to better identify underserved customers, target program offerings and develop KPIs. The Program Administrator shall report back by March 31, 2024 or an alternative timeline deemed reasonable by Commission staff with research results.

Sub-Alternative A: Emphasize underserved customers facing the highest energy burden when gathering additional data and conducting further analysis.

Sub-Alternative B: Emphasize underserved small business customers when gathering additional data and conducting further analysis.

Sub-Alternative C: Emphasize a different underserved customer segment when gathering additional data and conducting further analysis.

D. Environmental and Economic Research and Development Program (EERD)

Background

The EERD program was created by the Legislature under 1999 Wisconsin Act 9 to fund research projects that study the environmental and economic impact of energy use in Wisconsin. The funding level was set at 1.75 percent of total revenues collected for public benefits. The primary goal of EERD was to contribute practical and useful knowledge to planning the state's energy future by funding research projects that fill gaps in existing knowledge. EERD addressed the interconnections between energy use, environmental quality, and economic development. Also in place was a forum of nine members who represented agencies and organizations that assisted in setting the agenda for research and selecting projects to be funded.

When the state legislature shifted the Focus program from the Department of Administration to the Public Service Commission with the enactment of 2005 Wisconsin Act

141, a funding level was no longer prescribed for the EERD program. At that time, including carryover from previous years, the EERD program budget was about $1.2 million in 2009 and $1.6 million in 2010. During the first Quadrennial Planning Process in November 2010, the Commission established an EERD funding level of $2 million annually, at the same time it was determined that Focus funding should be increased.[73] (PSC REF#: 141173.)

However, in June 2011, the Legislature passed 2011 Wisconsin Act 32 which repealed the higher funding levels and returned them to 1.2 percent of operating revenues beginning in 2012. Because several of the Commission's Quad I decisions in 5-GF-191 were tied to funding levels, they required Commission reconsideration. The issues were: (1) goals for electric and natural gas savings and annual targets for the Focus program; (2) funding for EERD program; and (3) how avoided costs should be determined. The Commission considered these matters at its open meeting of December 22, 2011 and made two decisions affecting the EERD program. First, it determined that a lower level EERD funding level was appropriate and set funding not to exceed $100,000 annually. Second, it shifted the focus of the research from the "environmental and economic impacts of energy use in this state" to one that "provides benefits to program design and delivery." (PSC REF#: 158228.) The Commission also concluded that with the reduction in funding, it may be too costly to maintain the Forum structure for the small number of projects that would be funded. It directed the Program Administrator to review the administration of EERD and make recommendations for streamlining the selection and oversight of EERD projects. (PSC REF#: 158228.) The Program Administrator, in consultation with

[73] On November 9, 2010, the Commission issued its Order in docket 5-GF-191 and sent a request to the Joint Committee on Finance to approve an increase in the funding of energy efficiency and renewable resource programs. On December 14, 2010, the Commission's request was approved and contributions were set at $120 million in 2011, $160 million in 2012, $204 million in 2013, and $256 million in 2014 and thereafter.

Commission staff, decided to disband the Forum and work together on deciding research topics to be funded and managing the project selection process.

During the second Quadrennial Planning Process the Commission kept the funding level at $100,000 and the issue of its funding level was not included in the scope for the third Quadrennial Planning Process.

EERD Budget

Following the Commission's redefinition of the EERD program's purpose, the Program Administrator continued to solicit new research projects through competitive procurements. A committee consisting of Program Administrator staff and Commission staff evaluate and rate the proposals submitted.

Over the last nine years, the EERD program funds carried over from Quadrennial Planning Process I have been spent down. In some years the Program Administrator has not solicited new projects, typically in the final year of a quadrennial period when the Commission could be setting a new direction for the next four years and where research to support program design and delivery may be most appropriate after this direction is known. Under the guidance of Commission staff, the Program Administrator has strategically managed the carryover balance of the EERD fund over time, recognizing that once carryover funds are spent, the $100,000 annual budget would present certain limitations on the types of research projects that could be funded. Based on recent project proposals, a $100,000 annual EERD budget could fund at most, one or two projects per year. Table 15 below shows projects selected for funding between 2013 and 2021 totaling $1,330,857. The current EERD balance is $315,454 and there are no plans for a funding cycle in 2022 since it is the last year of Quad III.

Table 15. EERD Projects Awarded Funding by Year, 2013-2021

Year Awarded	Project	Contractor	Budget
2013	*Motivating High Energy Users to Save Energy-*	Cool Choices, Inc.	$79,192
2013	*Wisconsin Building Code Analysis: Identifying Low Cost, High Impact Measures*	Sustainable Engineering Group	$90,000
2013	*Biogas Storage for On-Farm Anaerobic Digesters in Wisconsin: Technical Assessment, Market Assessment, and Focus on Energy Opportunity*	Tetra Tech	$98,649
2015	*Ductless Mini-split Heat Pumps*	Tetra Tech	$63,140
2016	*New Homes Baseline and Market Characterization Study*	Seventhwave	$100,000
2016	*Mid-sized Business Characterization*	EMI Consulting	$98,388
2016	*Embedded Data Centers*	Seventhwave	$71,889
2017	*Characterizing the Renewable Energy Landscape in Wisconsin*	Tetra Tech	$78,400
2017	*Light Level Analysis in Buildings*	Seventhwave	$69,694
2020	*Multifamily and Single Family Air Source Heat Pumps*	Center for Energy & Environment (CEE)	$114,500
2020	*Residential Dehumidification in Wisconsin*	CEE	$69,088
2020	*Behavioral and Technology Based Load Management Opportunity Case Studies*	Illume	$65,000
2020	*Cold Climate Variable Refrigerant Flow Systems*	Slipstream	$85,000
2020	*Next Generation C&I Programs: Energy Management Information Systems (EMIS)*	Slipstream	$66,900
2021	*Focus on Energy Rooftop Solar Potential Study Report*	Cadmus	$181,017
	TOTAL		**$1,330,857**

Quad IV Serving as a Transition Period for Focus

Quad IV will be a transition period for the Focus program due to several of the macro-policy issues discussed in Phase I. Regardless of the Phase I decisions, there are other decisions discussed in Phase II of this memorandum that point to a Focus program in transition. For example, regardless of what the Commission decides regarding Focus' role with electrification, the transition to a cleaner grid is underway in Wisconsin, and therefore, a greater emphasis on energy demand for Focus may be prudent. This would require a better understanding of system

load shapes, end-use load shapes, and energy savings load shapes, as well as the sources of electricity generation.

The Focus Evaluator's analysis of the LED lighting market provides evidence that Focus has played a significant role in transforming the LED lighting market in the state. Currently, Wisconsin's LED market share is third highest in the country, behind only California and Nevada which have both begun enforcing light bulb efficiency standards of the Energy Independence and Security Act (EISA) prior to these standards becoming federal law. The U.S. Department of Energy finalized a pair of rules on April 26, 2022 that will phase out older incandescent light bulbs in favor of more efficient LEDs and compact fluorescent lighting. [74] This federal ruling will impact the ability of all energy efficiency programs, including Focus, to claim LED savings and savings from residential lighting are anticipated to decline significantly. The Focus Evaluator, Commission staff, and the Program Administrator have anticipated this decision and have taken steps to account for a decrease in electric savings. However, during Quad III of Focus, savings from LEDs represent approximately 80 percent of electric savings for the Residential sector.

The anticipated decline in residential LED savings has driven the selection of recent rounds of EERD project funding. For example, the 2020 round of EERD projects funded research into heat pumps and other technologies listed in Table 15, above, to assess what energy saving technologies are on the horizon for Focus. This issue is also elaborated on in the market transformation and resource acquisition section of this memorandum.

A forward-looking assessment of markets for emerging technologies and program design and delivery strategies to support the clean energy transition will continue to be paramount to the

[74] DOE finalizes rules to phase out older light bulbs, estimates consumers will save $3B annually

future success of Focus. Given the current pace and magnitude of the transition, research to strategically support Focus' role in this transition is as important as it ever has been. Program staff rely on these research projects to not only understand ways to adapt existing programs and design and deliver new program endeavors, but also to support the Commission's ability to make informed decisions with respect to the program's priorities.

The decision alternatives at the end of this section seek the Commission's direction on the appropriate budget for the EERD program in Quad IV. In some respect, determining an appropriate budget for research may require understanding the Commission's Quad IV decisions in their totality. However, even with full understanding of these decisions, Commission staff acknowledge that the types of research projects to support the Commission's decisions and their cost to execute are not well understood at this time. Setting a budget informed by recent EERD activity and project budgets in concert with the Commission's Phase I decisions and staff's analysis in this section may be sufficient to determine a reasonable annual EERD budget for Quad IV. With an established budget, the Program Administrator, with guidance from Commission staff, would begin to strategize and prioritize research needs that align with the Commission's Quad IV priorities and budget expectations. As shown in Table 15 above, through the first three years of Quad III, EERD has funded nearly $600,000 in research projects, relying on a combination of carryover funds from prior years and the annual $100,000 funding allocation. Therefore, annual funding of $200,000 would maintain a status quo level of investment in EERD research during Quad IV.

Stakeholder Comments – EERD Budget

Funding for EERD was specifically mentioned by one commenter in the scoping phase and Phase I of Quad IV Planning. Wisconsin's Greenfire urged the Commission to use the

opportunity that this Quad Review presents to reestablish the historic Focus R&D fund with a concentration on innovative energy efficiency program design, innovative distributed renewable program design and delivery, and other clean energy resource topic areas, particularly for low-income energy efficiency and renewable program opportunities. (PSC REF#: 433963.)

While not specifically mentioning EERD, other stakeholders commented on the need to do more research and collect data in order to analyze topics such as end-use load shapes to determine when savings occur since Focus currently does not differentiate time-of-use savings. Instead savings are treated as though they accrue evenly throughout the year. This is a simplification that limits the ability to target measures delivering savings at critical times. (PSC REF#: 434107.) (PSC REF#: 426080.) Being able to differentiate these savings is important if the emphasis on demand is more of a Commission priority in Quad IV whether it be for reliability or decarbonization purposes as outlined in a previous section in this memo.

While several stakeholders outlined the need for additional dollars for research, tracking, and verification, other stakeholders including the WUA and the ICG did not support diverting Focus incentive dollars for such activities and stated any dollars for these purposes should come from existing evaluation and administration dollars (PSC REF#: 434182) (PSC REF#: 434220.)

Commission Alternatives – EERD Budget

Alternative One would keep EERD funding at $100,000 annually and is consistent with its decision in Quad II. This alternative is appropriate if the Commission wants to keep the same amount of funding for incentives and technical and customer support.

Alternative Two is appropriate should the Commission want to allocate additional dollars to fund EERD projects in support of its decisions in Quad IV Planning. This may include dedicating more research into forward-looking assessments of markets for emerging

technologies, or performing analysis of the program's ability to achieve demand reductions at times critical to grid reliability. These and other research initiatives could support the Commission's Phase I direction that Quad IV serve as a transitional period where Focus seeks to make progress toward greater emphasis on reducing carbon emissions and promoting beneficial electrification.

Alternative Three is appropriate should the Commission want to establish an EERD funding level consistent with its discussion of the topic. Alternative Four would be appropriate should the Commission want maintain current levels of Focus dollars for incentives and technical and customer support but believes work should begin on market transformation activities or research into the many questions around Focus' role in supporting the clean energy transition using funding from sources other than ratepayer contributions. Commission staff could explore other sources of funding such as federal, state, or foundation dollars once they have a firmer idea of costs for the types of research mentioned above. The challenge would be to find a funding source that matches Focus' objectives as well as its desired deliverables and timeline. In addition, the funding would need to be viewed as unbiased which can be an issue with both private and foundation sources.

Alternative Five is appropriate if the Commission wants to increase EERD funding and also seek additional outside sources of funding for research supporting program design and delivery. The same challenges exist as outlined in Alternative Four above.

Alternative One: The Commission determines that the annual allocation for EERD should remain at $100,000.

Alternative Two: The Commission determines that the annual allocation for EERD should be increased to $200,000.

Alternative Three: The Commission determines that the annual allocation for EERD should be an amount consistent with its discussion.

Alternative Four: The Commission determines that the annual allocation for EERD should remain at $100,000 but directs Commission staff to identify other potential funding sources besides Focus.

Alternative Five: The Commission determines that the annual allocation for EERD should be increased consistent with its discussion and directs Commission staff to identify other potential funding sources besides Focus.

E. Behavioral Program Approval by the Commission

Background

Historically, programs offered by Focus have achieved energy savings by offering customers financial incentives, along with technical assistance, to purchase energy efficient and renewable energy products and services. This model of influencing customers' economic decisions has been the standard in programs across the country. However, an increasing number of states and utilities have expanded their portfolios to include behavioral programs that seek to change customers' habits and motivations by enhancing their awareness of their energy use, providing them with more information on how to reduce their energy use, and using social influences to motivate them to save energy.

The issue of behavioral program designs in Focus was first addressed by the Commission during Quadrennial Planning II. In its Final Decision of September 5, 2014, the Commission found it "reasonable for Focus funds to be used for residential behavior pilot projects." (PSC REF#: 215245.) The Commission added that any behavioral programs "should have a high bar for approval," since research to date on behavioral programs in other states remained uncertain

regarding the amount of savings the programs could cost-effectively achieve and the persistence of program savings over time. To assess individual programs against that standard, the Commission required Focus to submit individual program proposals for Commission approval in advance of implementation.

In its final decision of June 6, 2018 regarding the use of behavioral programs during the third Quadrennium, the Commission again determined that the Program Administrator would be required to submit individual program proposals for Commission approval in advance of implementation. (PSC REF#: 343909.)

Evolution of Behavioral Programs

While behavioral programs may be a newer program design, many utilities have quickly adopted behavioral approaches for energy efficiency since the Commission made its initial decision eight years ago. In an analysis of the nation's 52 largest utilities, 39 offered behavior-based programs as part of their energy efficiency portfolio.[75] Home energy reports (HERs) are one example of behavioral programs common with utilities. HER programs attempt to motivate customers to change their usage behaviors by comparing their energy usage to similar customers nearby, offering options to improve their energy use, and encouraging them to improve their performance relative to their peers.

[75] Relf, Grace et al. 2020 Utility Energy Efficiency Scorecard. 2020. https://www.aceee.org/research-report/u2004.

There is a vast amount of literature supporting savings claims[76,77] and the validity of techniques used in behavioral program design.[78,79] In fact, the techniques used to evaluate behavioral programs are similar to techniques used to claim savings for more traditional programs in the Focus portfolio. Evaluations have found that the cost-to-benefit ratios of behavioral programs vary depending on the measure life[80] and measurement approach.[81] For example, studies have found that the ratio of benefits to costs for home energy reports to be 3.5 for a three-year measure life, and 1.1 for a one-year measure life. Notably, there has been increasing evidence that savings from these programs persist for many years. [82,83] Further, in communications with the Focus evaluation staff, they stated that because most HER evaluations occur as large-scale randomized controlled trials (RCTs), program administrators and regulators can be very confident about the savings the programs deliver. In fact, there is greater confidence in the savings from HER programs compared to other energy efficiency measures because of the rigor with which HER programs have been evaluated. In sum, these HER programs are tested and generate realized, cost-effective savings.

[76] Dougherty, Anne et al. Energy efficiency behavioral programs: Literature review, benchmarking analysis, and evaluation guidelines. 2015. https://mn.gov/commerce-stat/pdfs/card-report-energy-efficiency-behavorial-prog.pdf
[77] Sussman, Reuven and Maxine Chikumbo. Behavior Change Programs: Status and impact. 2016. https://www.aceee.org/research-report/b1601.
[78] SEE Action. Evaluation, measurement, and verification (EM&V) of residential behavior-based energy efficiency programs: Issues and recommendations. 2012. https://eta-publications.lbl.gov/sites/default/files/behavior-based-emv.pdf.
[79] Stewart, James and Annika Todd. The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures. 2020. https://www.nrel.gov/docs/fy21osti/77435.pdf
[80] Dougherty, Anne et al. Energy efficiency behavioral programs: Literature review, benchmarking analysis, and evaluation guidelines. 2015. https://mn.gov/commerce-stat/pdfs/card-report-energy-efficiency-behavorial-prog.pdf
[81] Khawaja & Stewart. Long-run savings and cost-effectiveness of home energy report programs. 2015. https://www.cadmusgroup.com/wp-content/uploads/2014/11/Cadmus_Home_Energy_Reports_Winter2014.pdf
[82] H. Arnold, "Massachusetts Cross Cutting Evaluation Home Energy Report Savings Decay Analysis," Opinion Dynamics, Boston, 2014.
[83] C. Olig and W. Sierzchula, "Home Energy Report Opower Program Decay Rate and Persistence Study," Navigant, Chicago, 2016.

In addition to energy savings, behavior-based programs offer flexibility and a space for program administrators to innovate and test different implementation strategies. For example, a better understanding of customer responses to marketing tactics or changes to incentives through behavioral research can be gained, resulting in process improvements for other efficiency programs. Also, behavior-based programs allow engagement with communities on a more personal level. Community-based and gamified energy efficiency campaigns have demonstrated savings reductions of up to 14-16 percent.[84] These programs also encourage efficient upgrades to equipment like appliances, regardless of incentives, that would not otherwise occur.[85]

Behavioral Programs in Focus

Although there are programs within Focus that combine a behavioral approach with the more "traditional" approach involving incentives for measures installed, these programs are not required to be go before the Commission for approval. For example, behavioral change for business customers in Wisconsin have been primarily addressed through Strategic Energy Management (SEM) programs. SEM programs or energy manager programs seek to promote operational, organizational, and behavioral changes that result in greater efficiency gains on a continuing basis.

Since the Commission's original decision eight years ago, there has only been one pilot behavioral program offered by Focus. The Commission approved the Save to Give rural community engagement pilot (Save to Give Challenge) in March of 2020. (PSC

[84] Sussman, Reuven and Maxine Chikumbo. Behavior change programs: Status and impact. 2016. https://www.aceee.org/research-report/b1601.
[85] Brandon, Alec et al. Do the effects of social nudges persist? Theory and evidence from 38 natural field experiments. https://www.nber.org/system/files/working_papers/w23277/w23277.pdf

REF#: 387802.)[86] [87] This pilot focuses on empowering rural Wisconsin communities to save energy while investing in local organizations. By changing a few old habits at home, participating residents can reduce energy bills and help the community raise up to $25,000 to support local nonprofits in their community. The Save to Give Challenge encourages energy-saving behaviors and offers a range of benefits to participating communities:

- Communities share in a fun, community-building, and unifying challenge.
- Residents save energy and money and earn points by recording a few actions they took to conserve energy each week.
- When enough residents accrue points by saving energy, the community's favorite nonprofits earn donations from Focus on Energy.

Bayfield County and the City of Lodi participated in the first phase of the pilot and concluded their campaigns in 2021. Cadmus conducted a process evaluation of these two Phase I communities in the spring of 2022. The evaluation included a participant survey intended to gauge overall experience with the program, including understanding the types of energy saving actions taken and satisfaction with the program's overall design and delivery. Cadmus found that the Phase I participants reported levels of program satisfaction comparable to other behavioral programs the firm has evaluated. Additionally, the process evaluation found that 94 percent of survey respondents reported they continued to perform the energy saving actions they learned through participating in the pilot after the campaigns had concluded. Cadmus will be performing a customer billing analysis in 2022 that will seek to quantify energy savings of the Phase I pilot participants.

[86] The Commission had approved a Focus behavioral pilot in April of 2016 (PSC REF#: 285314) but Commission staff and the Program Administration recommended discontinuing the pilot after the original implementation contractor was sold which created uncertainties as to whether the pilot could be successfully implemented. (PSC REF#: 294032.)

[87] The Program Administrator released an RFP for the pilot in the summer of 2020 and an evaluation team consisting of PSC staff, a utility representative and Program Administrator staff, chose the winning proposal which then went to the Commission for approval.

Phase II of the Save to Give Challenge launched in the City of New Richmond and the Village of Mt. Horeb in early 2022. Both communities will finish their campaigns in 2022.

Behavioral savings achievement was modeled in Focus' *2021 EE Potential Study*. Direct and indirect energy feedback measures accounted for a notable share of cost-effective and achievable residential savings potential. Analysis of all offerings found that behavioral-based measures (i.e., direct and indirect energy feedback) accounted for approximately six percent of four-year residential electric savings potential and 16 percent of four-year residential natural gas savings potential under current policy conditions. The residential behavioral measure with the greatest available cost-effective savings potential was Direct Energy Feedback – HVAC Schedule Setback.[88] This measure ranked third overall in terms of cost-effective residential natural gas energy efficiency savings potential. (PSC REF# 420467 at 34.)

In addition to behavioral pilots initiated by the Focus Program Administrator, the Future Focus Initiative has received numerous idea submissions related to behavior-based programs and devices from both customers and vendors.[89] Due to market demand, there are more vendors and potential trade allies and partners than ever before offering services and products supporting behavioral programs. However, the current process which requires Commission approval to proceed with a behavioral program, makes it difficult for the Program Administrator to act on these idea submissions in a timely fashion.

[88] Direct energy feedback refers to real-time information on energy use that the customer can then use to make a behavioral choice that impacts their energy use, in this instance, adjusting their thermostat to save energy.
[89] The Future Focus process reviews new concepts and technologies that have the potential to expand the range and value of services available to Wisconsinites, as well as help the program achieve desired outcomes of energy savings, customer satisfaction, and/or market transformation. The process also helps test offerings for future expansion/inclusion in the Focus program portfolio. Concepts and technologies that are submitted are screened on a quarterly basis for possible program funding.

Commission Alternatives – Behavioral Programs

Alternative One is appropriate should the Commission determine that behavioral programs can play an important role in the Focus portfolio of programs. Behavioral programs are becoming increasingly mainstream and can produce savings, serve as an entry point for other Focus programs and provide a space to innovate and try new implementation strategies. Further, Alternative One is appropriate, given that the Program Administrator has a performance contract with SEERA and therefore, is held accountable for the success or failure of program designs.

Alternative Two would allow the Program Administrator to use Focus funds for behavioral programs during the quadrennium but maintain the current requirement for Focus behavioral programs to be pre-approved by the Commission. Alternative Three is appropriate if the Commission determines that behavioral programs should not be part of the Focus portfolio.

Alternative One: The Commission determines that Focus funds may be used for behavioral pilots during the quadrennium, at the discretion of the Program Administrator.

Alternative Two: The Commission determines that Focus funds may be used for behavioral pilots during the quadrennium. However, any proposed behavioral program design shall be returned to the Commission for approval in advance of implementation.

Alternative Three: The Commission determines that Focus funds should not be used for behavioral programs.

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Attachments:

Attachment A: Summary of the Commission's Phase I Decisions
Attachment B: Phase I Comments
Attachment C: Phase II Decision Alternatives and Connection to Phase I Decisions

Attachment A - Summary of the Commission's Phase I Decisions

Issue	Commission Decision
Alignment with Decarbonization Goals	Focus should play a larger role in cost-effectively reducing carbon emissions and Quad IV should serve as a transitional period during which the program continues to emphasize energy savings but also seeks to make measurable progress toward a transition to greater emphasis on reducing carbon emissions. The Focus Evaluation Work Group (EWG) shall develop recommendations to operationalize enhanced measurement and tracking of the program's carbon emissions reduction impacts for the purposes of program evaluation and performance tracking.
Electrification – Fuel Switching from Unregulated Fuels	Focus shall continue not to claim savings and other benefits from directly supporting beneficial electrification where fuel switching from unregulated fuels to electricity provided by a participating utility occurs through its own programs and offerings.
Electrification – Emphasis	Focus shall use Quad IV as a transitional period to position the program to take on a larger role in promoting beneficial electrification statewide.
Utility Voluntary Programs	The Focus Program Administrator shall develop and maintain a menu of options for utility voluntary programs to be shared with participating Focus utilities.
Collaboration with Utility Demand Response Programs	Focus shall maintain its current level of support for utility demand response programs.
Affordability – Low-Income and Income-Qualified Programs	Focus should continue to offer income-qualified programs and coordinate with the Department of Administration's weatherization programs to fill potential gaps in low-income offerings and should explore developing a community-based pilot(s) in one or more targeted communities. The Focus Program Administrator shall convene a stakeholder group that includes community-based organizations that work with marginalized communities to gather input on effective methods to reduce barriers in order to effectively reach these customers. The Focus Program Administrator shall develop Key Performance Indicators for income-qualified programs for the Commission's consideration in Phase III of the Quad IV Planning Process.

Attachment B - Phase I Comments

Commenter	Link to Comments
Legislature	
Sen. Julian Bradley and Rep. Mike Kuglitsch	PSC REF#: 434027
Utilities/Fuel Providers	
WI Propane Gas Association	PSC REF#: 434105
WPPI Energy	PSC REF#: 434087
WI Utilities Association	PSC REF#: 434220
Organizations	
350 Wisconsin	PSC REF#: 434002
ACEEE	PSC REF#: 434040
APTIM, Focus Program Administrator	PSC REF#: 434107
Axiom Energy Group	PSC REF#: 434021
Center for Energy & the Environment	PSC REF#: 434214
Citizens Utility Board	PSC REF#: 434196
Clean Wisconsin	PSC REF#: 434025
CLEAResult Consulting	PSC REF#: 433971
Domtar –Nekoosa Mill/Jason McCauley	PSC REF#: 434109
Franklin Energy	PSC REF#: 434106
Industrial Customers Group	PSC REF#: 434182
Midwest Building Decarbonization Coalition	PSC REF#: 434092
Midwest Energy Efficiency Alliance	PSC REF#: 434101
Midwest Tribal Energy Resources Association	PSC REF#: 434104
RENEW Wisconsin	PSC REF#: 433908
Rocky Mountain Institute	PSC REF#: 434014
Sierra Club	PSC REF#: 434231
Sierra Club – Combined Comments from Members	PSC REF#: 434232
Slipstream	PSC REF#: 434110

Organizations (Continued)	Link to Comment
U.S. Green Building Council	PSC REF#: 433907
Vernon County Energy District	PSC REF#: 434042
Wisconsin Cast Metals Association	PSC REF#: 433460
Wisconsin EcoLatinos	PSC REF#: 434037
Wisconsin's Greenfire	PSC REF#: 433963
Wisconsin Health Professionals for Climate Action	PSC REF#: 434108
Wisconsin Local Government Climate Coalition	PSC REF#: 434059
Wisconsin Manufacturers & Commerce	PSC REF#: 434219
Individuals	
Kathy Allen	PSC REF#: 433957
Mike Arny	PSC REF#: 433990
William G. Braier	PSC REF#: 433758
Michael Erkamaa	PSC REF#: 434033
Thomas Hickey	PSC REF#: 434003
Chris Klopp	PSC REF#: 434289
Andrea Kremer	PSC REF#: 433986
Bruce Krawisz	PSC REF#: 433958
Nancy Kriofsky	PSC REF#: 434011
Mark Lindborg	PSC REF#: 434082
Suzanne Moynihan	PSC REF#: 433896
Harry Parrott	PSC REF#: 433855
George J. Perkins	PSC REF#: 434017
Katherine Riebe	PSC REF#: 433867
Mary E. Ross	PSC REF#: 433868
Jenny Ruggini	PSC REF#: 434230
Donald Schaeffer	PSC REF#: 433903
Lila Zastro/Dave Hendrickson	PSC REF#: 434062

Attachment C - Phase II Decision Alternatives and Connection to Phase I Decisions

Issue	Decision Alternatives	Relationship to Phase I Decisions Identified by Staff
How to state energy savings goals	**Alt. 1**: Status Quo. Establish an overall MMBtu savings goal with minimum performance requirement (MPR) thresholds for kWh and therm savings. **Sub-Alts. A-E**: Define MPR thresholds. **Alt. 2**: Establish an overall MMBtu goal without kWh and therm MPRs. **Alt. 3**: Do not establish an overall MMBtu goal. Set kWh and therm specific goals instead.	The Phase I staff memorandum identified fuel neutral savings goals as a common feature of programs aligned with decarbonization goals because it encourages holistic cost-effective program design that can support beneficial electrification.
Lifecycle vs. Annual Savings Goals	**Alt. 1**: Status Quo. Maintain a four-year savings goal expressed in lifecycle savings. **Alt. 2**: Establish a four-year savings goal based on first-year savings.	No direct relationship to the Commission's Phase I decisions identified.
Emphasis between Energy and Demand	**Alt. 1**: Status Quo. Establish goals based on reductions in energy use and peak demand reduction with more emphasis on energy use savings. **Sub-Alt. A:** Direct Focus to perform research in Quad IV to assess strategies for achieving greater demand savings and better understand the value of additional demand savings. **Alt. 2**: Establish goals based on reductions in energy use and peak demand reduction and increase the program's emphasis on demand reduction.	Some programs are examining the role of energy efficiency in the context of the grid's transition toward more renewable generation sources. The Commission's Phase I decisions directing Focus to make measurable progress toward a transition to greater emphasis on reducing carbon emissions and to position the program to take on a larger role in promoting beneficial electrification statewide have connections to the decisions in this section.
Time-Varying Value of Energy Efficiency and Renewable Resources	**Alt. 1**: Investigate opportunities to integrate the time-varying value of energy efficiency and renewable energy into program operations.	Quantification of time-varying benefits of energy efficiency and renewable resources would have a direct connection to the

Issue	Decision Alternatives	Relationship to Phase I Decisions Identified by Staff
	Sub-Alt. A: The Focus Delegated Commissioner shall determine the appropriate source of funds for this research at a later date. **Sub-Alt. B:** This research shall be funded from the Quad IV Focus Evaluation contract budget. **Sub-Alt. C:** This research shall be funded from the Quad IV EERD budget. **Alt. 2**: Do not investigate opportunities to integrate the time-varying value of energy efficiency and renewable energy into program operations.	Commission's Phase I decision directing EWG to develop recommendations to operationalize enhanced measurement and tracking of the program's carbon emissions reduction impacts since both emissions and avoided cost benefits vary temporally.
Winter Peak Period Definition	**Alt 1**: Adopt a winter electric peak period definition and begin quantifying and tracking winter electric peak savings. **Alt. 2**: Do not adopt a winter electric peak period definition.	This decision is connected to the Commission's Phase I decision to position the program to take on a larger role in promoting beneficial electrification statewide. With more electrification, winter electric peaks are more likely to grow than diminish.
Peak Natural Gas	**Alt. 1**: Adopt a winter natural gas peak period definition and begin quantifying and tracking winter natural gas peak demand savings. **Sub-Alt. A**: EWG shall investigate and develop recommendations to quantify avoided cost benefits from peak natural gas savings. **Sub-Alt. B**: IOUs shall coordinate with Commission staff and the Focus Evaluator to submit peak natural gas avoided costs in support of evaluating cost-effectiveness of Focus	The Commission's Phase I decision to position the program to take on a larger role in promoting beneficial electrification statewide recognizes that Focus may play a role in the electrification of space heating going forward which has the potential to offset growth in winter peak natural gas demand. This consideration may factor into the Commission's decision to begin quantifying and tracking winter peak natural gas savings.

Issue	Decision Alternatives	Relationship to Phase I Decisions Identified by Staff
	Alt. 2: Do not adopt a winter natural gas peak period definition.	
Emphasis between Business and Residential Programs	**Alt. 1**: Status Quo. 60 percent of funds shall be allocated to Business Programs; 40 percent to Residential programs. **Alt. 2**: Choose a different allocation of funding between Business and Residential Programs	No direct relationship to the Commission's Phase I decisions identified.
Resource Acquisition and Market Transformation	**Alt. 1**: Continue emphasizing near-term savings and prioritizing program designs that simultaneously achieve near-term savings while targeting long-term market changes. **Alt. 2**: Continue emphasizing near-term savings but increase the program's emphasis on market transformation by identifying ways to adapt Focus' existing portfolio to achieve long-term market effects. The Focus Evaluator shall report on progress to adapt existing portfolio activities to achieve long-term market effects. **Sub-Alt. A**: Direct Commission staff to propose a heat pump adoption target in Phase III of Quad IV Planning. **Sub-Alt. B**: Direct the Focus Evaluator to develop an assessment of the Focus' market transformation potential in coordination with the Program Administrator and Commission staff.	The Commission's Phase I decisions recognized a period of transition for the program with respect to alignment with decarbonization goals and emphasis on beneficial electrification. Assessing market transformation opportunities in support of these priorities may require a long-term view of the program's role. In that sense, developing a better understanding of the program's role in markets for energy efficiency and renewable technologies that also support a clean energy transition may be of service to the Commission's Phase I decisions.
Cost-Effectiveness – Primary Test	**Alts. 1 – 7**: Choose a primary cost-effectiveness test.	Different cost-effectiveness tests are designed to represent different perspectives. The Commission's decision

Issue	Decision Alternatives	Relationship to Phase I Decisions Identified by Staff
		on the primary test should take into account the perspective that appropriately represents its priorities. The Commission's Phase I decisions setting Quad IV as a transitional period toward a greater emphasis on reducing carbon emissions and taking on a larger role in promoting beneficial electrification statewide may factor into its decision on the primary cost-effectiveness test for the portfolio.
Cost-Effectiveness – Secondary Tests	**Alt. 1**: Choose one or more cost-effectiveness tests to be calculated and reported for informational purposes. **Alt. 2**: Do not choose a cost-effectiveness test to be reported for informational purposes.	Similar to the choice of a primary test, the Commission may want to consider its Phase I decisions setting Quad IV as a transitional period in determining appropriate cost-effectiveness tests to calculate and report form informational purpose.
Cost-Effectiveness – Low-Income and Income-Qualified Programs	**Alt. 1**: Exclude programs and offerings targeting customers below **80** percent of statewide median income from Focus' primary cost-effectiveness test. **Alt. 2**: Exclude programs and offerings targeting customers below **60** percent of statewide median income from Focus' primary cost-effectiveness test. **Alt. 3**: Apply a benefits adder to programs and offerings targeting customers below **80** percent of statewide median income in Focus' primary cost-effectiveness test. **Alt. 4**: Apply a benefits adder to programs and offerings targeting customers below **60** percent of statewide median income in Focus' primary cost-effectiveness test.	The Commission's Phase I Decisions included direction to continue offering income-qualified programs an engage in efforts to assist with the DOA's low-income weatherization program and explore developing community based pilot(s). The Commission can determine if these efforts should be included in its portfolio level test of net cost-effectiveness.

Issue	Decision Alternatives	Relationship to Phase I Decisions Identified by Staff
	Alt. 5: Status Quo. Do not apply specific guidance to programs and offerings targeting customers below 80 percent of statewide median income in Focus' primary cost-effectiveness test.	
Avoided Costs – Avoided Electric Energy Costs	**Alt. 1**: Status Quo. Maintain the current approach to calculating electric avoided energy costs. **Alt. 2**: Direct EWG to propose an alternative method.	No direct relationship to the Commission's Phase I decisions identified.
Avoided Costs – Avoided Electric Capacity Costs	**Alt. 1**: Status Quo. Maintain the current approach to calculating avoided electric capacity costs. **Alt. 2**: Maintain the current approach to calculating avoided electric capacity costs and also incorporate the unit costs of baseload and intermediate capacity.	No direct relationship to the Commission's Phase I decisions identified.
Avoided Cost – Avoided Transmission and Distribution Costs	**Alt. 1**: Status Quo. Maintain the current approach to calculating avoided transmission and distribution costs. **Alt. 2**: Direct EWG to propose an alternative method for calculating avoided transmission and distribution costs for the Commission's consideration. **Alt. 3**: Avoided transmission and distribution costs shall not be estimated for the purposes of evaluating Focus. **Alt. 4**: Other action.	No direct relationship to the Commission's Phase I decisions identified.
Avoided Cost – Natural Gas Avoided Costs	**Alt 1**: Status Quo. Maintain the current approach to calculating avoided natural gas costs. **Alt. 2**: Direct EWG to propose an alternative method for calculating avoided natural gas costs.	No direct relationship to the Commission's Phase I decisions identified.
Carbon Value	**Alt. 1**: Status Quo. Maintain a carbon value of $15 per ton.	The Commission's Phase I decisions to make measurable progress toward a

Issue	Decision Alternatives	Relationship to Phase I Decisions Identified by Staff
	Alt. 2: EWG shall propose an updated market-based carbon value for the Commission's consideration. **Alt. 3**: Use a social cost of carbon. **Alt. 4**: The Commission sets a value for carbon consistent with its discussion.	transition to greater emphasis on reducing carbon emissions may impact its decision on how to value carbon for purposes of calculating Focus portfolio cost-effectiveness. The Commission should determine if a social cost of carbon or a market-based value is consistent with its Phase I decisions.
Discount Rate	**Alt. 1**: Use a zero percent discount rate. **Alt. 2**: Status Quo. Maintain a 2 percent discount rate. **Alt. 3**: Use a weighted cost of capital discount rate of 7.3 percent. **Alt. 4**: The Commission sets a discount rate consistent with its discussion.	A discount rate determines how future program benefits are valued. The Commission should determine what discount rate aligns with its Phase I decisions.
Budgets – Energy Efficiency & Renewables	**Alt. 1**: Status Quo. Allocate $5.5 million annually for renewables **Sub-Alt. A**: Status Quo. $5.5 million is for incentives only, non-incentive costs taken out of Core efficiency budget. **Sub-Alt. B**: $5.5 million is for incentive and non-incentive costs **Sub-Alt. C:** Direct the Program Administrator to propose a renewable energy workforce development KPI in Phase III of Quad IV Planning. **Alt. 2**: Allocate a different dollar annual amount for renewables	The Commission may wish to consider the role of programs incentivizing adoption of carbon-free renewable energy resources in its Phase I directions to transition the program toward a greater emphasis on reducing carbon emissions and taking on a larger role in promoting beneficial electrification statewide.

Issue	Decision Alternatives	Relationship to Phase I Decisions Identified by Staff
	Sub-Alt. A: The allocated amount is for incentives only, non-incentive costs taken out of Core efficiency budget. **Sub-Alt. B**: The allocated amount is for incentives and non-incentive costs. **Sub-Alt. C:** Direct the Program Administrator to propose a renewable energy workforce development KPI in Phase III of Quad IV Planning. **Alt. 3**: Set a four-year maximum budget KPI to give the Program Administrator the flexibility to shift funds between the Renewable and Core Efficiency budgets with approval from Commission staff. **Sub-Alt. A**: The maximum budget KPI is for incentives only, non-incentive costs taken out of Core efficiency budget. **Sub-Alt. B**: The maximum budget KPI is for incentive and non-incentive costs. **Sub-Alt. C**: Set the four-year maximum budget KPI at $22 million. **Sub-Alt. D**: Set the four-year maximum budget KPI at an amount consistent with the Commission's discussion.	

Issue	Decision Alternatives	Relationship to Phase I Decisions Identified by Staff
	Sub-Alt. E: Direct the Program Administrator to propose a renewable energy workforce development KPI in Phase III of Quad IV Planning. **Alt. 4:** Do not set a spending maximum for renewables and allow the Program Administrator to allocate funding as necessary to meet the Commission's goals as long as spending aligns with Focus' statutory obligations and Commission polices.	
Budgets – Underserved and Rural	**Alt. 1:** Status Quo. Continue a rural program emphasizing industrial and agriculture customers, with some residential programs at an annual budget of $8 million. **Alt. 2:** Develop KPIs to target a percentage of incentive spend proportional to percentage of rural customers in designated zip codes. **Alt. 3:** Direct the Program Administrator to conduct analysis during the first year of Quad IV to better identify underserved customers, target program offerings and develop KPIs. Report back to the Commission by March 31, 2024. **Sub-Alt. A:** The analysis shall emphasize underserved customers facing the highest energy burdens. **Sub-Alt. B:** The analysis shall emphasize small business customers.	The Commissions' Phase I decisions directed program actions to fill in gaps in delivering weatherization services to low-income customers and identifying program strategies to address participation barriers for customers in marginalized communities. Further, the Commission directed the Program Administrator to propose KPIs for its Quad IV income-qualified programs in Phase III of Quad IV Planning. The Commission may want to consider how the decision alternatives in this section may compliment or potentially overlap with its Phase I decisions. The Commission may want to select an alternative in this section to specify guidance to the Program Administrator on particular customer segment(s) it is interested in prioritizing in Quad IV.

Issue	Decision Alternatives	Relationship to Phase I Decisions Identified by Staff
	Sub-Alt. C: The analysis shall emphasize a different customer segment consistent with the Commission's discussion.	
Budgets – EERD	**Alt. 1**: Status Quo. Maintain an annual EERD budget of $100,000 **Alt. 2**: Increase the annual EERD budget to $200,000. **Alt. 3**: The Commission sets an annual EERD budget consistent with its discussion. **Alt. 4**: Maintain an annual EERD budget of $100,000 and direct Commission staff to identify other potential sources of funding.	The Commissions Phase I decisions directed the program to make measurable progress toward a transition to greater emphasis on reducing carbon emissions and to position the program to take on a larger role in promoting beneficial electrification statewide. Research and analysis will be required to support this direction.
Behavioral Programs	**Alt. 1:** Focus funds may be used for behavioral pilots at the discretion of the Program Administrator. **Alt. 2:** Status Quo. Focus funds may be used for behavioral pilots and any proposed behavioral program design shall be returned to the Commission for approval prior to implementation. **Alt. 3:** Focus funds shall not be used for behavioral programs.	