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Partnering with Wisconsin utilities



Planning Study – Stakeholder Input on Scenarios Fourth Meeting

May 21, 2025

Agenda

Commission Staff Update

Recap of Study Objectives and Timeline

Overview of Study Prototype Programs

Scenario Design

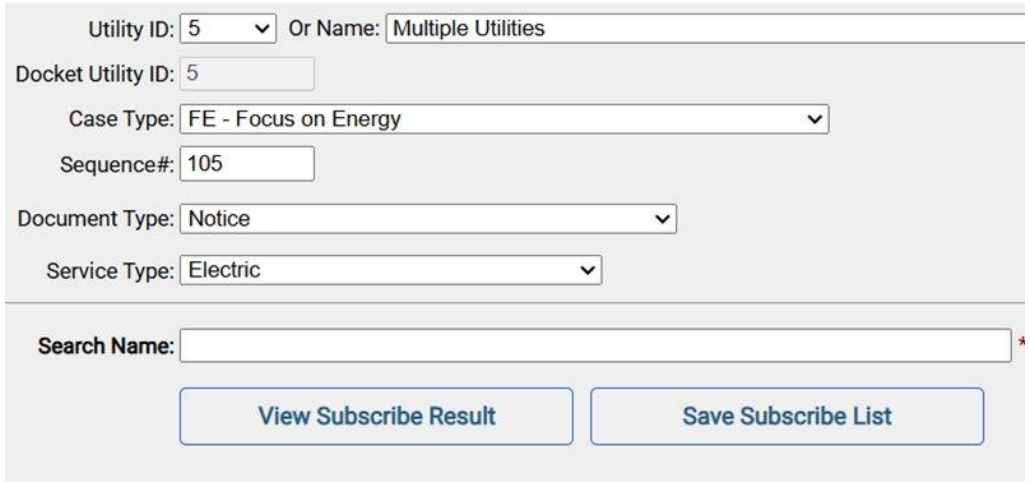
- Baseline Quad V Budget Assumption
- Scenario Assumptions

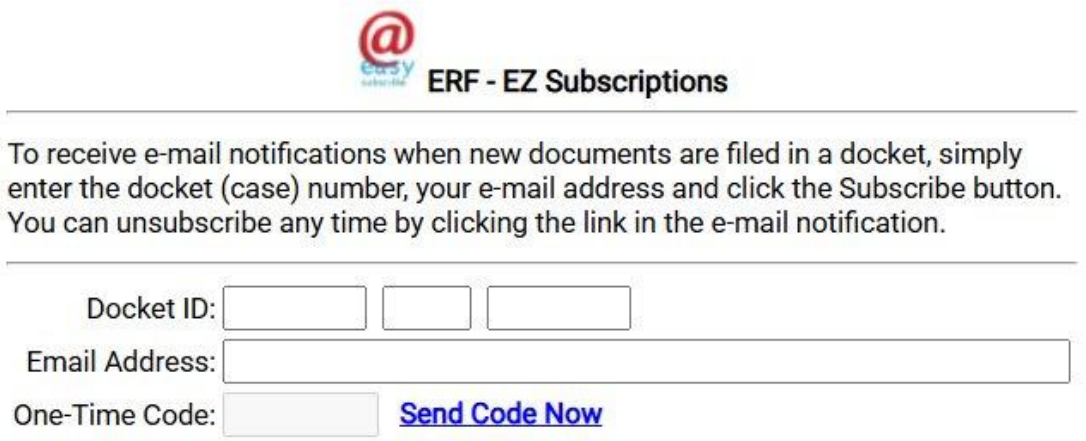
Follow-Up & Next Steps

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Commission Staff Update

- **PSC Docket 5-FE-105 – Quadrennial Planning Process V**
- Subscribe to receive e-mail notifications when new documents are filed.
  - EZ Subscription from the ERF landing page - No ERF account required. Email notification for all documents filed
  - Custom subscription by document type – Must create ERF account.
- There will be requests for comment. Multiple ways to file a comment:
  - Upload to ERF. Requires ERF account.
  - File a “web comment” on the Commission’s Public Comment web page
  - U.S. mail – instructions provided in the Request for Comment





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Recap of Study Objectives and Timeline

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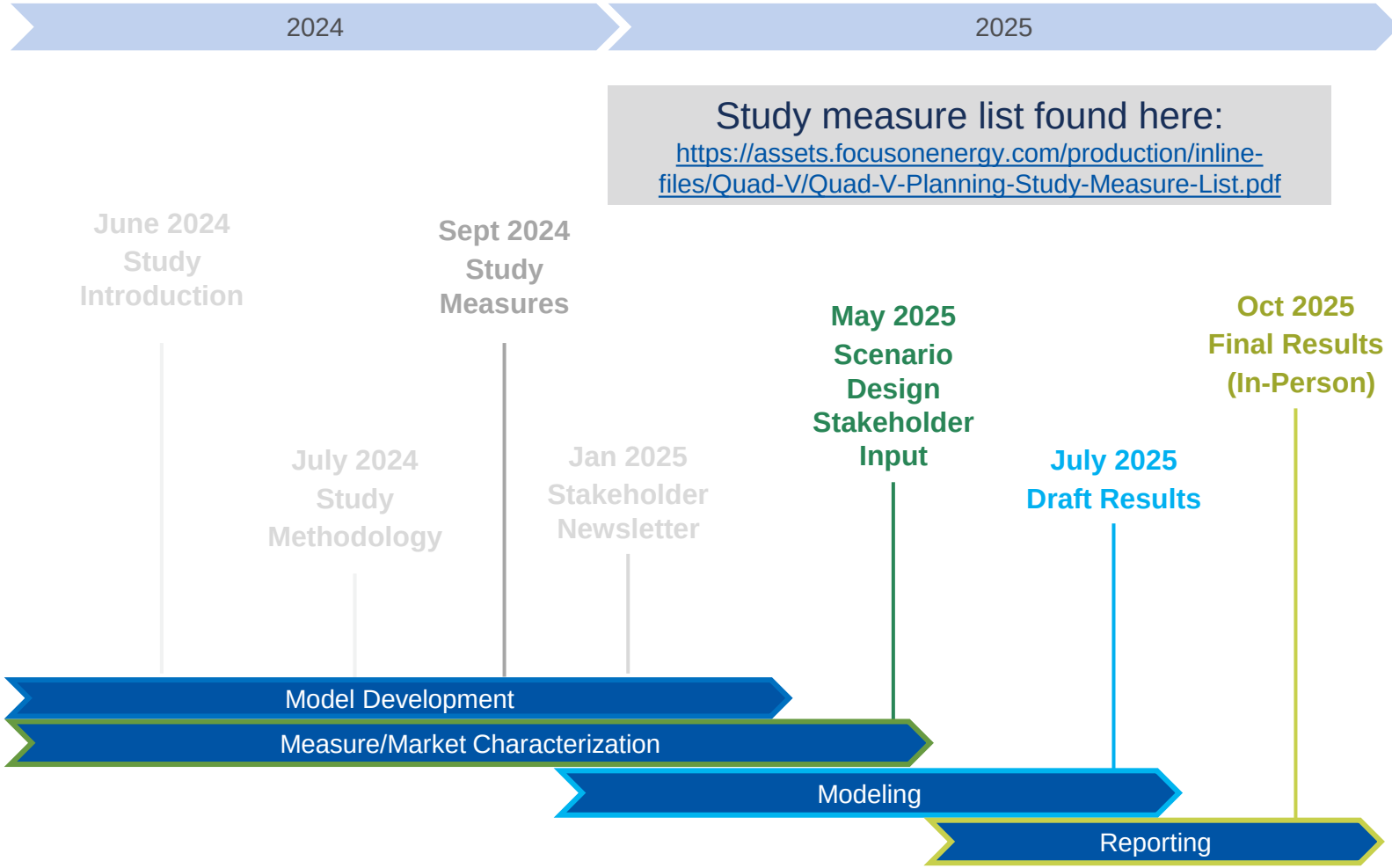
Questions from Stakeholder Meeting 3

QUESTIONS / COMMENTS	RESPONSE
For the historical perspective and gap analysis, why was there an increase in industrial gas savings in 2023?	In 2023, there was one very large custom project that drove almost all industrial savings. The takeaway is that large custom projects and their impacts can vary widely year-to-year.
How is Cadmus thinking about the sequencing of building shell measures with fuel switching? For example, if one assumes the building shell measures happen first, then there is less savings potential from HVAC measures (both electric and gas). However, if one assumes the HVAC measures (electric or gas) happen first, then the building envelop potential would seem to be reduced. Typically, it would be best to consider envelop measures first so that HVAC systems are sized correctly etc. Does that factor into the calculations?	The Cadmus potential model is run on an annual basis, and accounts for interactive effects between measures, such as HVAC systems and insulation. The model also accounts for the impacts of fuel switching on measure potential. For example, if a heating system is converted from gas to electric fuel, the insulation potential moves from gas to electric savings. In the model, the first technology that is installed will impact the other technologies for which potential is subsequently considered—be it the type of fuel that is saved or the savings of that installation.
Are the historical perspective charts showing lifecycle or first-year savings?	They represent first year savings.
Has there been any consideration for energy storage measures in the residential measure mix? Energy storage might not be considered an efficiency measure, but has there been thought for pairing energy storage with other systems to enhance energy efficiency? For example, linking energy storage to an EV charger, solar system, or heat pump.	The study includes several energy storage systems, both battery storage and thermal storage in the residential and commercial sectors.

Study Objectives and Timeline

Study objectives to understand:

- How focusing on **emissions reductions** could impact energy savings
- The value of / tradeoffs between focusing on **demand reduction** versus energy savings
- Potential energy, demand, and emission reductions in Wisconsin **across customer segments**, particularly for income-qualified households
- Options for and potential benefits of policy and programmatic changes that promote further **fuel switching**



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Study Themes Refresher

Energy Efficiency: Electric & Natural Gas	Economic Potential	Program Scenarios	Electrification	Peak Impact and Emissions Reporting
Technical Potential	Adoption Simulation (Optimized Potential)	Scenario Analysis	Distributed Solar	Hourly ‘Time-Value’ Impacts

Consistent with the prior study

New to this study

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Recap of Measure List Development

Approach for Draft Measure List Proposal

1. Categorized program measures based on measure names and descriptions and cross referenced with past potential study
2. Reviewed TRM to identify additional measures for future program design
3. Identified measures with electrification applications
4. Identified measures with demand shifting potential

Where past potential studies have focused on every possible measure, this planning study is targeted on program scenarios to analyze potential impacts of transitional program priorities. Therefore, the number of study measures may decrease, leading to an overall reduction in technical and economic potential estimates.

Work Since Last Meeting

Measure Characterization

Used program data, TRM calculations, and other sources to define energy impacts, cost, and lifetime of study measures.

Market Characterization

Applied utility data, census data, and other sources to define energy user population (building/industry type, income stratification, heating fuel, building and equipment characteristics) in each utility service area.

Hourly Emissions Profiles

Leveraged Strategic Energy Assessment utility electric generation data to create hourly emissions profiles for each study year (considering changing generation profiles).

Customer Research

Surveyed residential (standard and income-qualified), commercial (owners and renters), and agricultural energy users about study for study adoption model. Interviewed industrial facilities about energy use and measure adoption for industrial model.

Load Shape Development

Developed end-use specific load shapes leveraging NREL Res and Comstock data to develop annual hourly load shapes for each study measure.

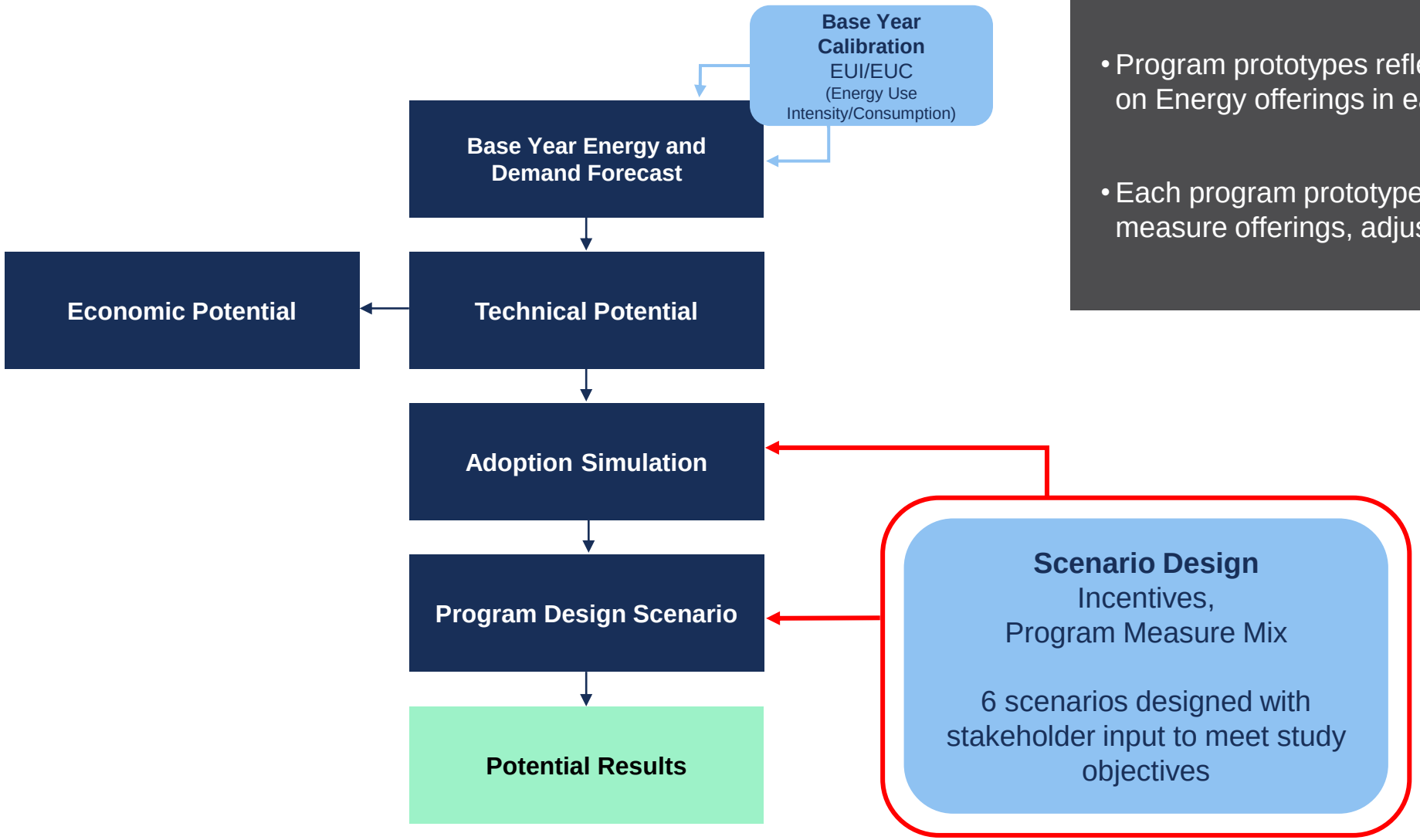
Model Development

Developed analytical models for hourly energy impacts that account for fuel switching.

Overview of Study Prototype Programs

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Use of Scenarios & Program Prototypes in Study Model



- Program prototypes reflect realistic potential Focus on Energy offerings in each scenario
- Each program prototype has distinct budgets and measure offerings, adjusted for each scenario

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Study Program Prototypes

- Study program prototypes based on current offerings, but NOT exact matches
- Program prototypes designed to intuitively group measure types
- Individual measures in only a single program prototype

PROGRAM NAME	CURRENT PROGRAM MEASURES	NEW MEASURES	BUILDING / POPULATION SEGMENT
Agriculture Program	All Agricultural measures (including HVAC and lighting measures for agricultural businesses)	Custom project, electrification applications	Agricultural businesses
Commercial Refrigeration, Cooking, and Appliances	Commercial Refrigeration, Commercial Cooking	Cooking electrification, Appliances	All commercial buildings
Commercial HVAC and Water Heating	All measures impacting HVAC and water heating end uses, including controls and building shell measures, as well as behavioral programs	Space heating electrification	
Commercial Lighting	All commercial lighting and lighting control measures		
Commercial Processes	All commercial measures impacting the Process end use (as well as miscellaneous measures such as pool heat and IT systems and wastewater treatment)		
Commercial Load Shifting		Thermal storage, EV / thermostat load shift	
Industrial Program	All measures impacting buildings in the industrial sector	Industrial electrification, Thermal Storage	All industrial buildings
Income-Qualified	Building shell, HVAC, water heater measures, cooking electrification, space heating electrification		Income-qualified

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Study Program Prototypes

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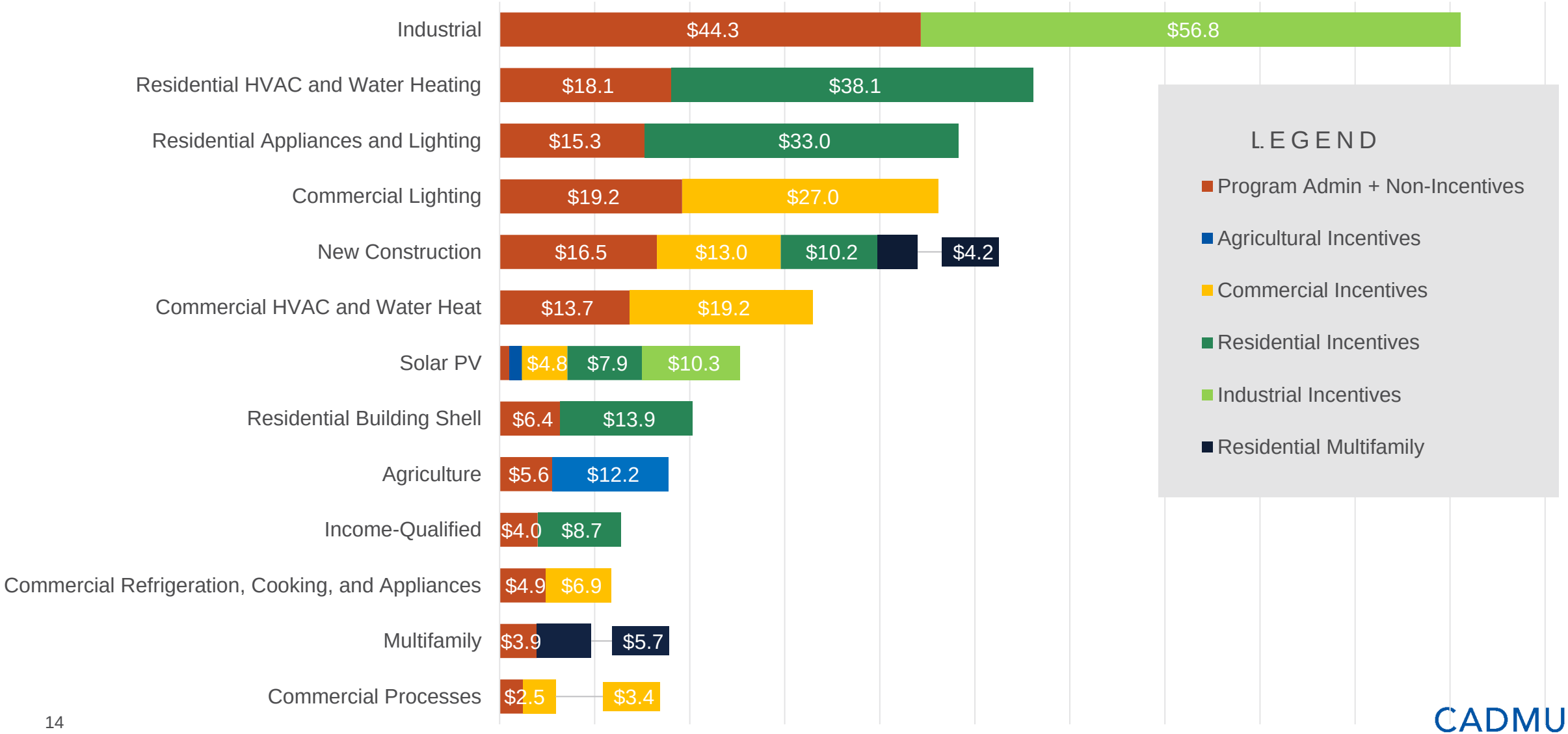
PROGRAM NAME	CURRENT PROGRAM MEASURES	NEW MEASURES	BUILDING / POPULATION SEGMENT
Multifamily	All measures impacting multifamily buildings		Standard and income-qualified
Residential HVAC and Water Heating	HVAC, Water heating equipment (water heating and space heating electrification)		
Residential Appliances and Lighting	Thermostats, appliances, lighting, water flow measures (aerators, etc.), pool pumps	Electric vehicle chargers	
Residential Building Shell	Building shell measures (insulation, air sealing, windows, etc.)		
Residential Load Shifting		Thermal and battery storage, EV/ thermostat/ water heater load shift	
Solar PV	Solar PV	All sectors	
New Construction	All measures focused specifically on improving new construction practices via Focus on Energy		

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Quad V Study Baseline Budget Assumption

Total budget = $432M

- Budget developed based on 2020-2023 reporting
- Program breakout below in million dollars



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Recap of Study Prototype Programs

Use	• Intuitive grouping of measures for allocating budget for Quad V priorities (scenario analysis) • Incentive and non-incentive program costs to understand program cost effectiveness
Baseline	• Realistic baseline provides basis of comparison for scenarios • Incentive and program budgets developed from four years of program data • Program groupings based on current design
Considerations	• Budgets developed with program administrator • Program design does not / may not perfectly align with current or future offerings structure

Scenario Design

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Scenario Design

Scenarios reflect realistic and possible program designs, while exploring study research objectives and stakeholder priorities

Scenarios designed to reflect changes compared to baseline design to show overall impacts

Initial scenario ideas developed in consultation with PSC and Program Administrator staff

Study objectives to understand:

- How focusing on **emissions reductions** could impact energy savings
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- Options for and potential benefits of policy and programmatic changes that promote further **fuel switching**
- Potential energy, demand, and emission reductions in Wisconsin **across customer segments**, particularly for income-qualified households

SCENARIO #	SCENARIO NAME
0	Baseline / Status Quo
1	Emission Reduction-Focused Program Design
2	Summer and Winter Demand Reduction-Focused Program Design
3	Electrification-Focused Program Design
4	Focus Funding Doubled
5	Focus Areas: Multiple Policy Priorities Under Consideration

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Scenario 0

Baseline / Status Quo

LEVER OPTIONS	PROPOSED
Budget	Baseline budget assumptions, as shown in previous slides
Measures to Include/Remove	All measures currently offered by Focus on Energy
Incentives	Align with current offerings as much as feasible

Scenario 1

Emission Reduction-Focused Program Design

LEVER OPTIONS	PROPOSED
Budget	Maintain sector level budgets
Measures to Include/Remove	Remove measures with lowest emission reduction potential
Incentives	Increase incentives for measures with highest emission reduction potential—which may shift budgets between sector programs Include all study efficiency measures (except low emission-reduction measures)

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Scenario 2

Summer and Winter Demand Reduction-Focused Program Design

LEVER OPTIONS	PROPOSED
Budget	Maintain sector level budgets
Measures to Include/Remove	Remove measures with lowest demand reduction potential in consultation with program administrator
Incentives	Increase incentives for measures with highest demand reduction potential—which may shift budgets between sector programs Add customer load shifting programs

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Scenario 3

Electrification-Focused Program Design

LEVER OPTIONS	PROPOSED
Budget	Maintain sector level budgets
Measures to Include/Remove	Add electrification measures and increase incentives for existing electrification measures
Incentives	Increase incentives for measures with highest electrification potential—which may shift budgets between sector programs

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Scenario 4

Focus Funding Doubled

LEVER OPTIONS	PROPOSED
Budget	Increase portfolio budget by 100% from Scenario 0 Budget increased proportionally from baseline design
Measures to Include/Remove	Maintain baseline measure mix
Incentives	Maintain baseline incentives

Scenario 5

Focus Areas: Multiple Policy Priorities Under Consideration

Policy Priority	Potential Policy Design Features
Greater Emphasis on Income-Qualified Offerings	Increase proportion of residential budget to income-qualified offerings Enhance incentives for income-qualified projects Emphasize deep energy retrofits
Greater Emphasis on Renewables	Increase budget for renewables compared to prior quads Enhance incentives for renewables
Adjust Residential/Business Budget Proportions	Allocate overall budget differently than the historical split of 60% Business, 40% Residential
Others?	

Note: Combining multiple policy priorities into a single scenario may present challenges in interpreting results.

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Questions for Stakeholders

1. How can the draft scenario designs be improved to reflect **study objectives**?

2. How can the draft scenario designs be improved to reflect **stakeholder priorities**?

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Thank You and Discussion



Next Steps:

- Cadmus to send out meeting notes
- Stakeholders please provide written feedback by June 4
- Cadmus will circulate summarized stakeholder feedback by June 11

Next Stakeholder Meeting:

- July 24 – focused on draft results
- Written feedback will be collected after the meeting

Your input is important, please send us feedback:

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