COMMERCE DEPARTMENT
ENERGY RESOURCES

Welcome

Conservation Applied Research & Development (CARD) Webinar

May 27, 2020

Economic Impacts of Minnesota's Conservation Improvement Program

Economic Impacts of Minnesota's Conservation Improvement Program



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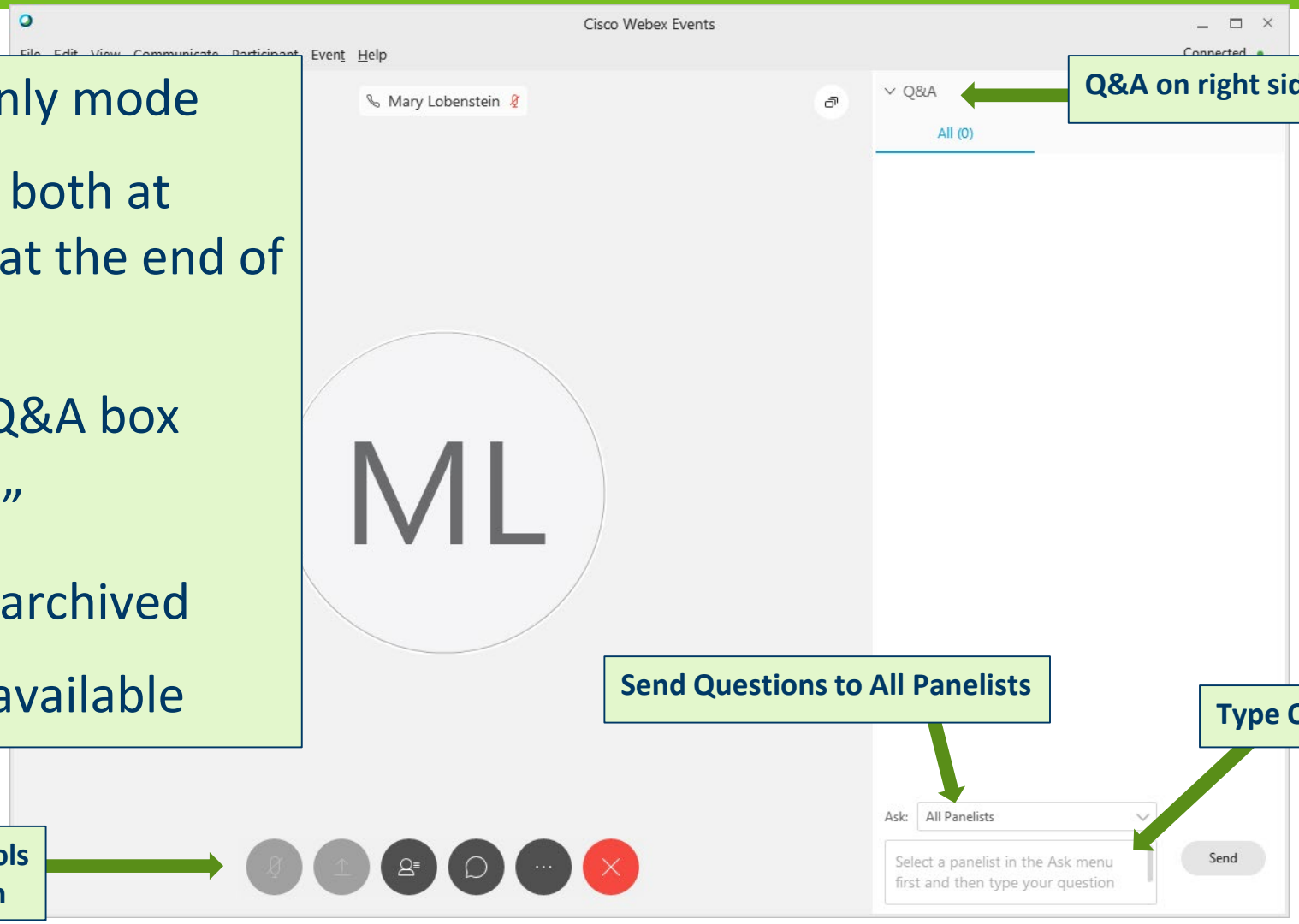
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Webinar Basics

- Attendees in listen-only mode
- Questions addressed both at strategic pauses and at the end of presentation
- Type questions into Q&A box
- Send to “All Panelists”
- Webinar recorded & archived
- Slide set will also be available



Minnesota Applied Research & Development Fund

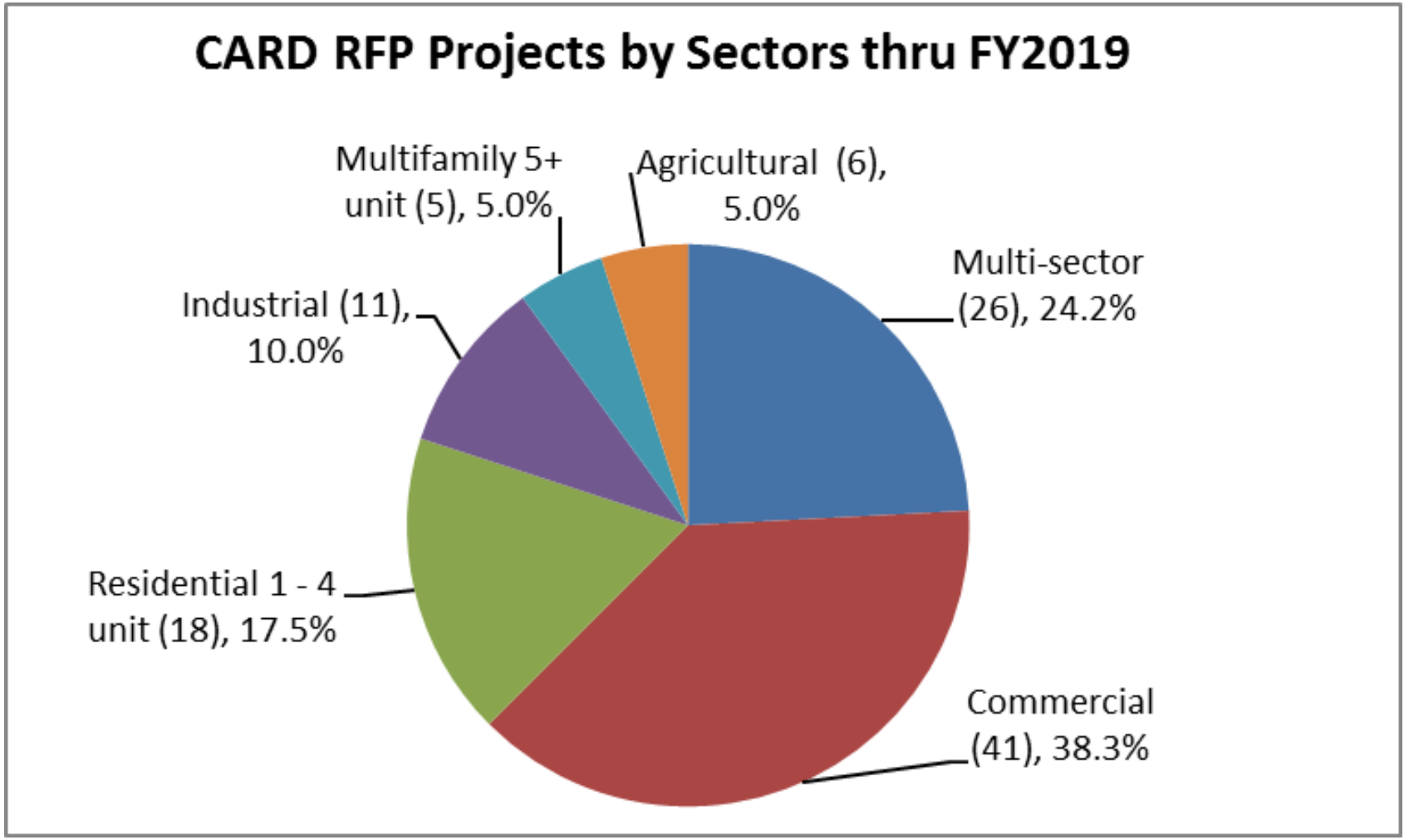
- **Purpose to help Minnesota utilities achieve 1.5% energy savings goal by:**
  - ***Identifying new technologies or strategies to maximize energy savings;***
  - ***Improving effectiveness of energy conservation programs;***
  - ***Documenting CO_2 reductions from energy conservation programs.***

Minnesota Statutes §216B.241, Subd. 1e

- **Utility may reach its energy savings goal**
  - **Directly through its Conservation Improvement Program (CIP)**
  - **Indirectly through energy codes, appliance standards, behavior, and other market transformation programs**

State Capitol Image: Courtesy Minnesota Department of Administration

CARD RFP Spending by Sector thru FY2019



RFP Summary

- 10 Funding Cycles
- 472 proposals
- 121 projects funded
- $27.4 million in research

Agenda

Study Objectives and Background

Economic Impact Analysis – Methodology and Results

Cost-Effectiveness – Methodology and Results

Conclusions and Recommendations

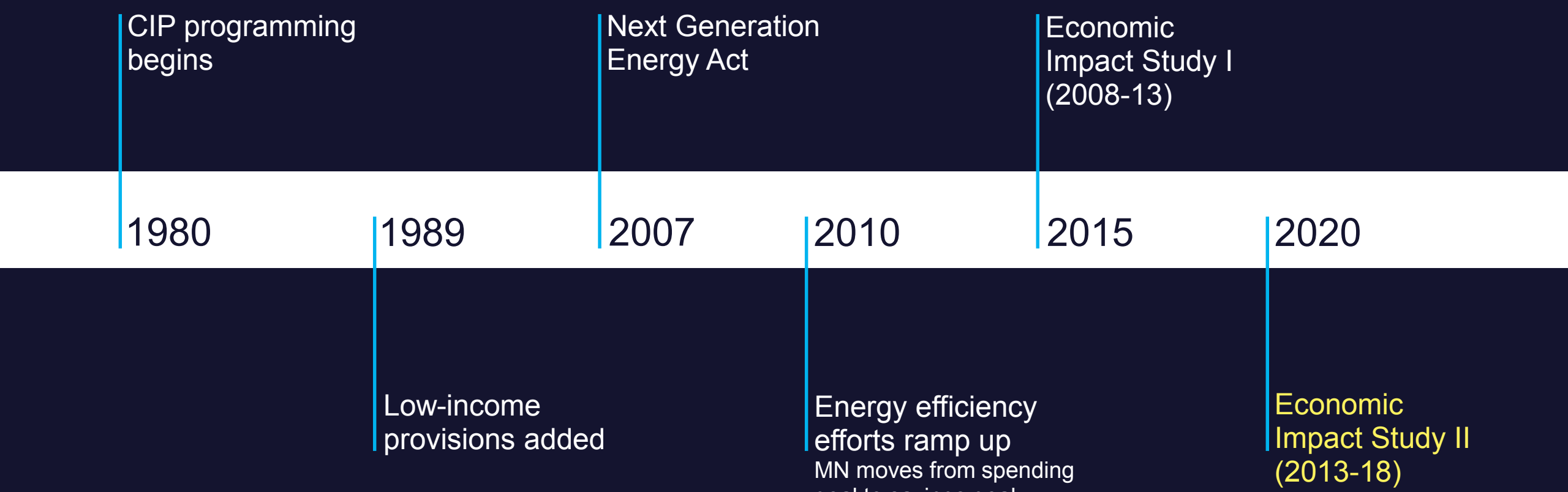
Study Objectives



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Timeline

Conservation Improvement Program and related events/studies



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Data Sources

Specific to Minnesota

eia
Independent Statistics & Analysis
U.S. Energy Information Administration

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eDockets - Search documents filed in utilities cases.

Energy Savings Platform
Energy Platforms



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Net Economic Impacts

2013-2018 CIP Investments

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Economic Impacts Scope



Model scenarios

1. Overall
2. Low-income & general programs
3. Electric & natural gas portfolios
4. IOU, coop, and muni portfolios

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General Methodology

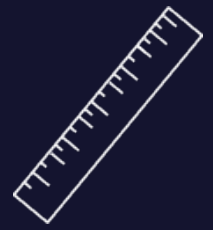


Develop Inputs

- Spending Changes
- Positive and negative impacts

Modeling

- Economic model
- Year-over-year inputs and outputs
- Comprehensive economic and demographic effects



Analyze Outputs

- Key Indicators: jobs, value add, income
- Order of magnitude
- Directional

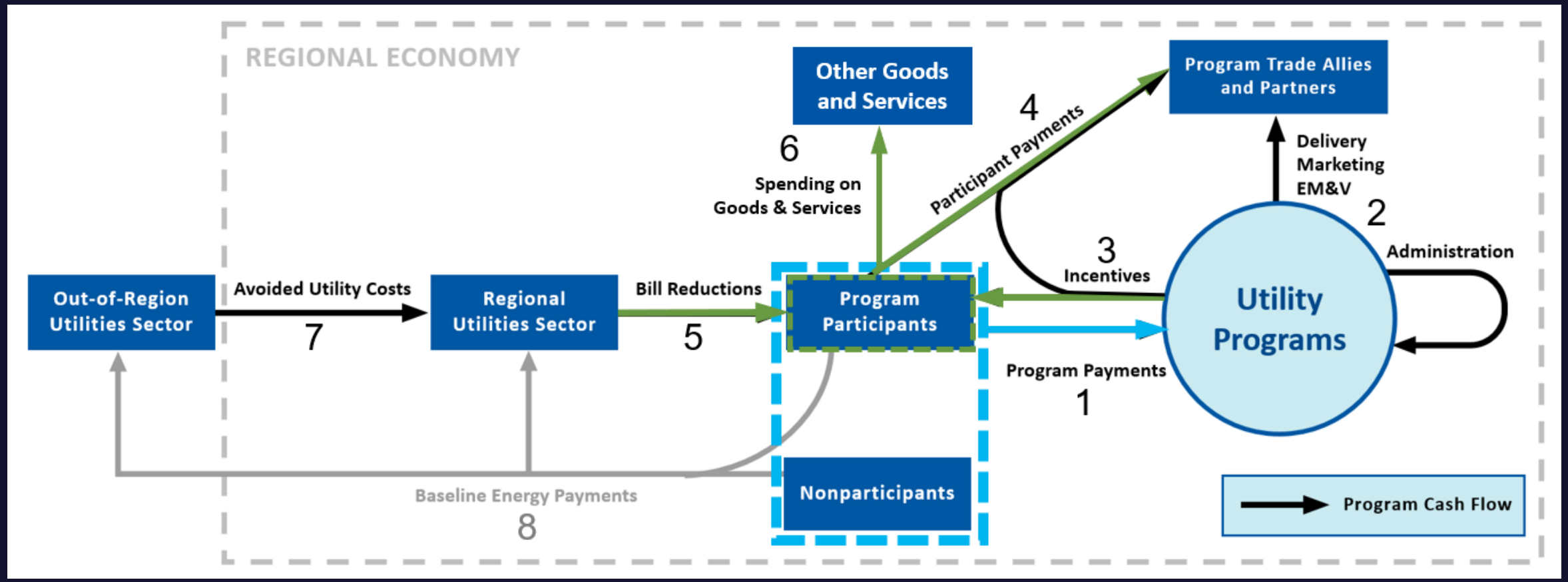
Changes in Methodology

- Transitioned modeling software from IMPLAN to REMI
- Updated assumptions for industries affected by CIP investment
- Compared different scenarios (fuel type, utility type, etc.)
- Included IOU shared savings performance incentives

Changes Induced by CIP

(Have your questions ready!)

Relative to Minnesota economy without CIP



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Net Economic Impacts (Fixed 2018$)

2013-18 CIP Investment

Cumulative Impacts **through 2042**

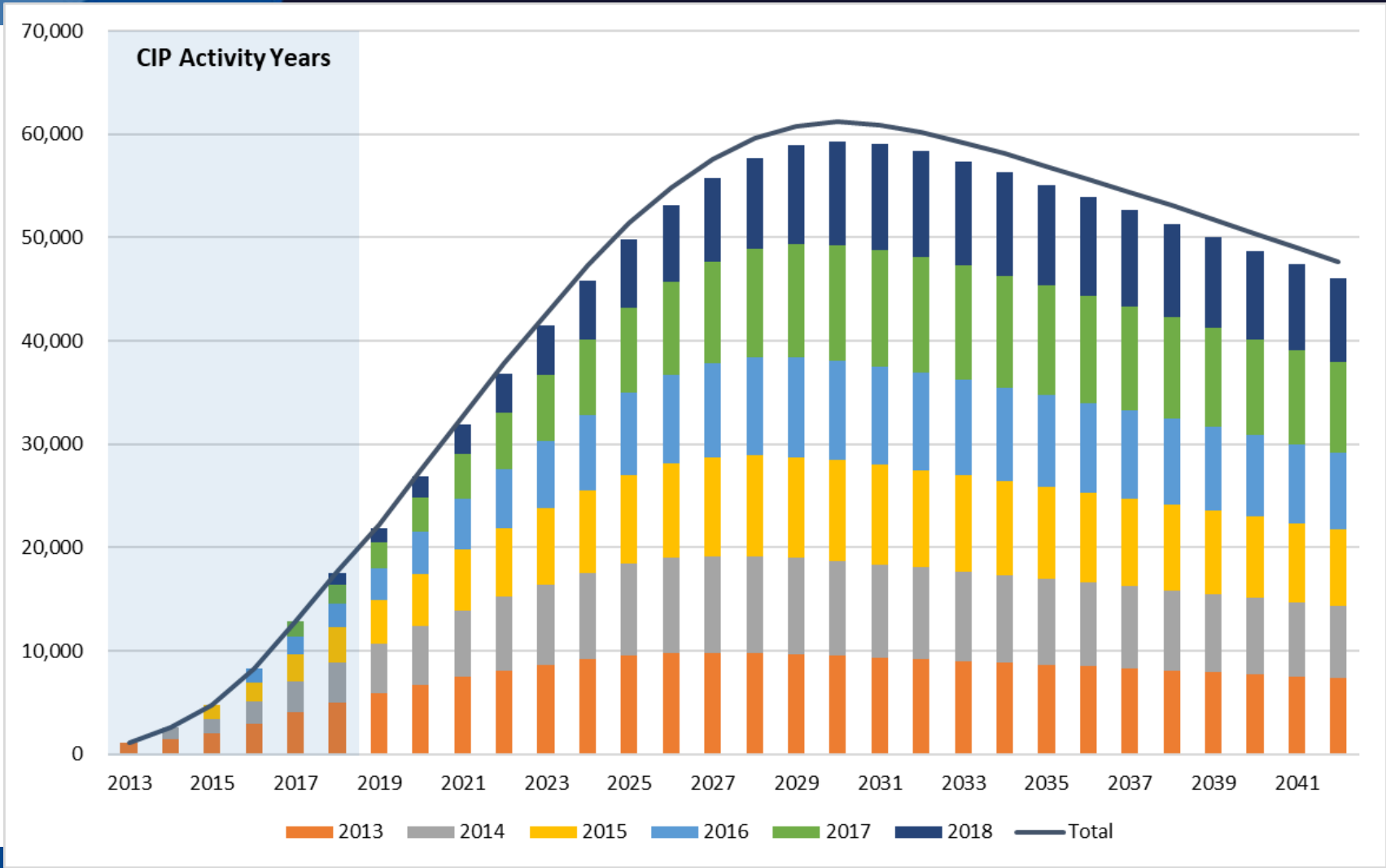
Employment (Jobs)	Labor Force (Individuals)	Output	GDP (Value Added)	Disposable Personal Income
47.7 K	**49.1 K**	**$10.9 billion**	**$5.4 billion**	**$5.0 billion**

Impacts Normalized for Spending

Employment/ $1MM	Labor Force/ $1MM	Output ROI	GDP (Value Added) ROI	Disposable Personal Income ROI
28	**29**	**$6.40**	**$3.14**	**$2.93**

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Cumulative Net Employment by Year



CIP investments create employment gains that persist for 10 to 15 years.

For example, gains from 2013-18 investments peak around 2030.

Additional investment in 2019 would push peak out to 2031 or farther.

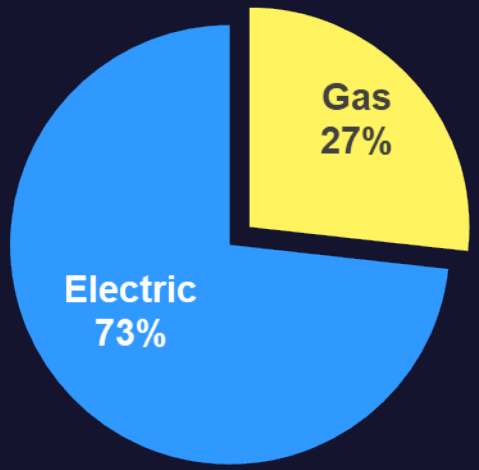
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Net Impacts by Fuel Type

Normalized by program spending

Scenario	Employment/ $1MM	Labor Force/ $1MM	Output ROI	GDP (Value Added) ROI	Disposable Personal Income ROI
Overall	**28**	**29**	**$6.40**	**$3.14**	**$2.93**
Electric	26	27	$6.11	$2.88	$2.86
Gas	32	31	$6.54	$3.68	$3.11

Total CIP Investment (2013-2018)



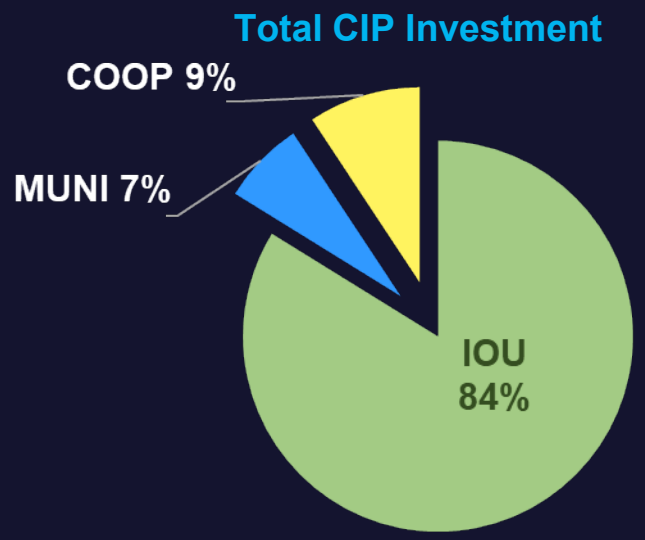
- Gas portfolio is 27% of CIP investment (pie chart)
- Economic impacts by fuel type contrasts with the cost-effectiveness results. While both are cost-effective, gas portfolio is slightly less cost-effective than electric.

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Net Impacts by Utility Type

Normalized by program spending

Scenario	Employment/ $1MM	Labor Force/ $1MM	Output ROI	GDP (Value Added) ROI	Disposable Personal Income ROI
Overall	**28**	**29**	**$6.40**	**$3.14**	**$2.93**
IOU	27	27	$6.15	$3.08	$2.71
Muni	44	52	$11.87	$5.73	$6.18
Coop	24	26	$4.54	$1.73	$2.45



- MUNIs had lowest total CIP spending from 2013-2018 but produce the strongest impacts per million in spending
- MUNIs spent the least per participant and reported the highest energy savings per dollar spent
- IOUs spent the most (pie chart)

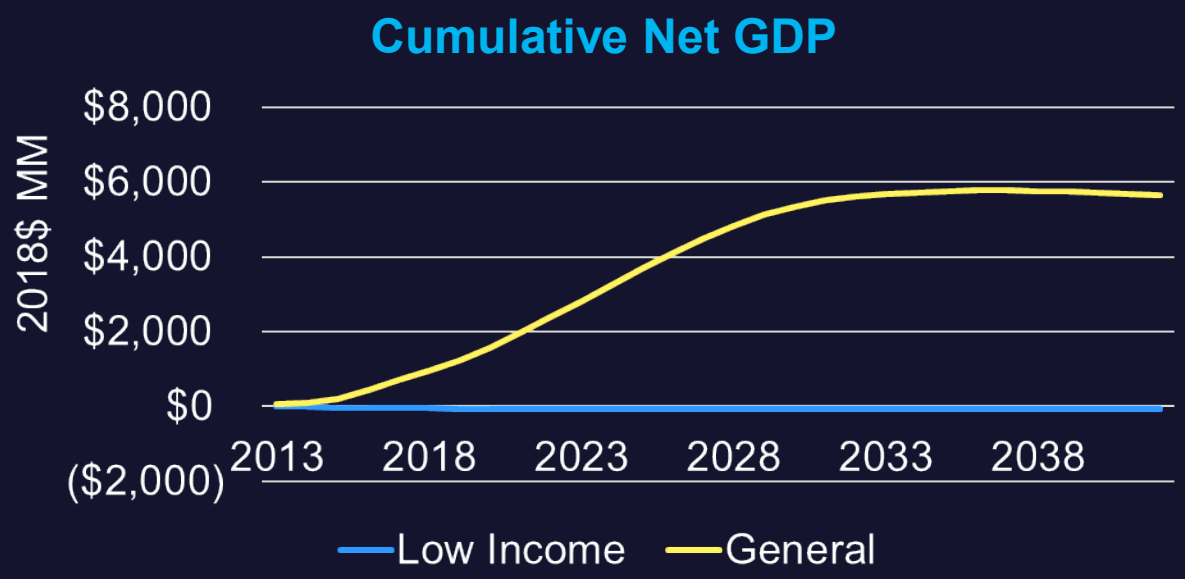
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(Have your questions ready!)

Net Impacts by Income Type

Normalized by program spending

Scenario	Employment/ $1MM	Labor Force/ $1MM	Output ROI	GDP (Value Added) ROI	Disposable Personal Income ROI
Overall	**28**	**29**	**$6.40**	**$3.14**	**$2.93**
General	29	30	$6.72	$3.31	$3.10
Low Income	0	(5)	($1.43)	($0.90)	($1.27)



- Overall CIP portfolio has strong positive economic impacts
- General programs are responsible for those benefits
- Low-Income programs <4% of CIP Spending
- Analysis does not capture all low-income program benefits (reduced collections, avoided shutoffs)
- Low-Income population served by both types of programs

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Pause for Q&A

Type questions into Webex Q&A panel
and send them to “All Panelists.”

Cost-Effectiveness

2018 CIP Investments

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Cost-Effectiveness

Four tests used in Minnesota

Societal Cost Test (SCT)

Benefits and costs from multiple perspectives
Primary test in Minnesota

Utility Cost Test (UCT)

Benefits and costs from utility perspective
Used to calculate performance incentives

Participant Cost Test (PCT)

Benefits and costs from participant perspective
Informs appropriate participant incentive levels

Rate Impacts Measure (RIM)

For informational purposes (not recommended)
Can help indicate changes to retail rates

2018 Electric Portfolio

Does not include economic impacts and shareholder incentives

SOCIETAL COST TEST (SCT)			
BENEFITS	COSTS	NET BENEFITS	RATIO
$1,054,013,191	$379,007,405	$675,005,786	2.78

PARTICIPANT COST TEST (PCT)			
BENEFITS	COSTS	NET BENEFITS	RATIO
$1,086,737,327	$298,734,095	$788,003,232	3.64

UTILITY COST TEST (UCT)			
BENEFITS	COSTS	NET BENEFITS	RATIO
$616,844,421	$171,818,759	$445,025,663	3.59

RATE IMPACTS TEST (RIM)			
BENEFITS	COSTS	NET BENEFITS	RATIO
$616,844,421	$1,112,058,567	($495,214,145)	0.55

	CIP Portfolio 2018	Xcel Energy 2018
SOCIETAL COST TEST (SCT)	2.78	1.98
PARTICIPANT COST TEST (PCT)	3.64	3.86
UTILITY COST TEST (UCT)	3.59	3.46
RATE IMPACTS TEST (RIM)	0.55	0.52

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2018 Gas Portfolio

Does not include economic impacts and shareholder incentives

SOCIETAL COST TEST (SCT)			
BENEFITS	COSTS	NET BENEFITS	RATIO
$306,002,613	$173,275,185	$132,727,429	1.77

PARTICIPANT COST TEST (PCT)			
BENEFITS	COSTS	NET BENEFITS	RATIO
$331,934,044	$139,867,946	$192,066,099	2.37

UTILITY COST TEST (UCT)			
BENEFITS	COSTS	NET BENEFITS	RATIO
$175,417,222	$64,716,914	$110,700,308	2.71

RATE IMPACTS TEST (RIM)			
BENEFITS	COSTS	NET BENEFITS	RATIO
$175,417,222	$339,944,699	($164,527,477)	0.52

	CIP Portfolio 2018	CenterPoint 2018 Actual
SCT	1.77	1.84
PCT	2.37	2.47
UCT	2.71	3.88
RIM	0.52	0.65

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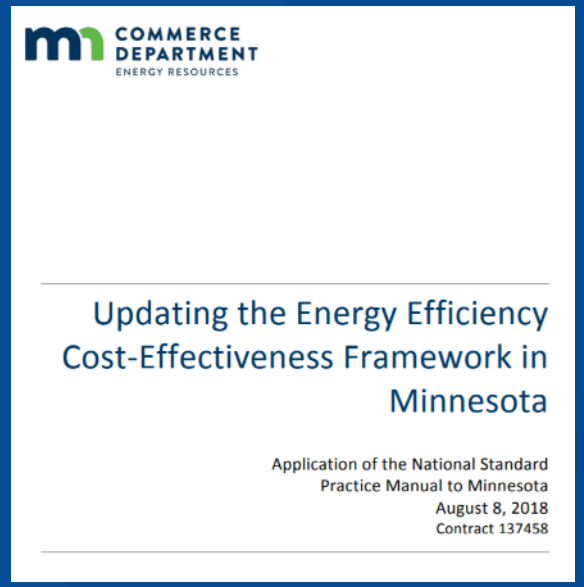
Enhanced CE Rationale

Includes DSM performance incentive and economic impacts

Recommendation: Shareholder incentives are cost: SCT, UCT, RIM

Recommendation: economic impacts as SCT benefit

- Wisconsin enhanced CE includes net economic impacts (value added)
- Economic benefits improve WI 2015-16 portfolio TRC from 3.24 to 4.77



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Enhanced CE – 2018 Portfolio

(Have your questions ready!)

SOCIETAL COST TEST (SCT)				
CE TYPE	**BENEFITS**	**COSTS**	**NET BENEFITS**	**RATIO**
Standard CE	$1,360,015,805	$552,282,589	$807,733,215	2.46
Enhanced CE	$2,266,721,128	$604,524,149	$1,662,196,978	3.75

106% increase in net benefits

52% increase to SCT ratio

UTILITY COST TEST (UCT)				
CE TYPE	**BENEFITS**	**COSTS**	**NET BENEFITS**	**RATIO**
Standard CE	$792,261,644	$236,535,673	$555,725,971	3.35
Enhanced CE	$792,261,644	$288,777,233	$503,484,411	2.74

9% decrease in net benefits

18% decrease to UCT ratio

RATE IMPACTS TEST (RIM)				
CE TYPE	**BENEFITS**	**COSTS**	**NET BENEFITS**	**RATIO**
Standard CE	$792,261,644	$1,452,003,266	($659,741,622)	0.55
Enhanced CE	$792,261,644	$1,503,244,826	($711,983,182)	0.53

8% decrease in net benefits

3% decrease in RIM ratio

PARTICIPANT COST TEST (PCT)			
BENEFITS	**COSTS**	**NET BENEFITS**	**RATIO**
$1,418,671,371	$438,602,040	$980,069,331	3.23

No change

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Pause for Q&A

Type questions into Webex Q&A panel
and send them to “All Panelists.”

Conclusions and Recommendations

CIP provides net positive benefits that persist for long after the EE installations are completed

- To avoid potential economic contraction in future, continue funding CIP
- To better understand the true benefits of the low-income programs, commission a study to quantify non-energy benefits that can be incorporated into future economic impact analysis

CIP can support programming for low-income customers while still greatly benefitting state economy

Statewide, CIP is very cost-effective

- Consider the appropriate level of risk-taking in terms of emerging technologies or new program designs

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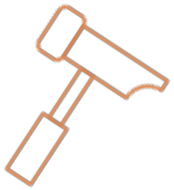
Thank You

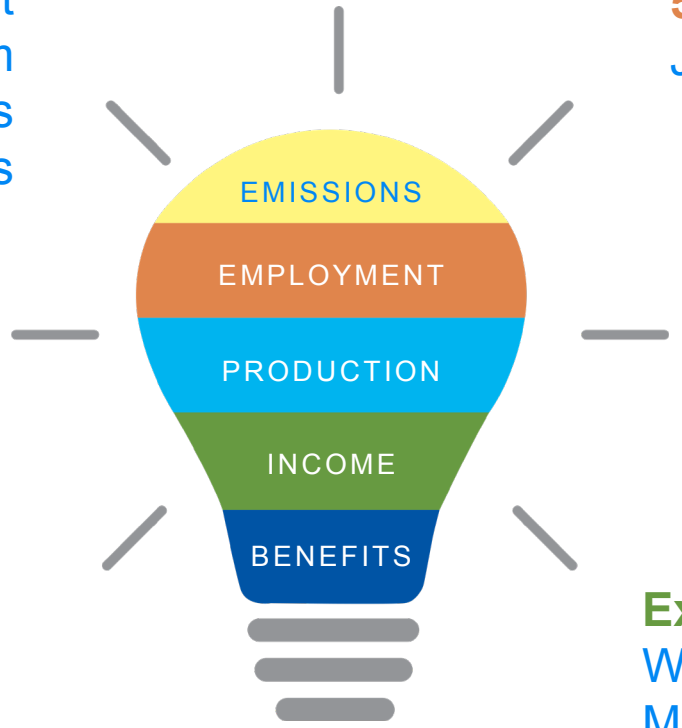
Additional Questions?

$146 Million Boost to GDP from Emissions Reductions



50,000 Local Jobs Added

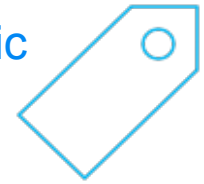




Each Dollar Spent on CIP Generates **$3.75 in Benefits to Society**



$11 Billion in New Economic Activity



Extra $900 in the Wallet of Each Minnesotan



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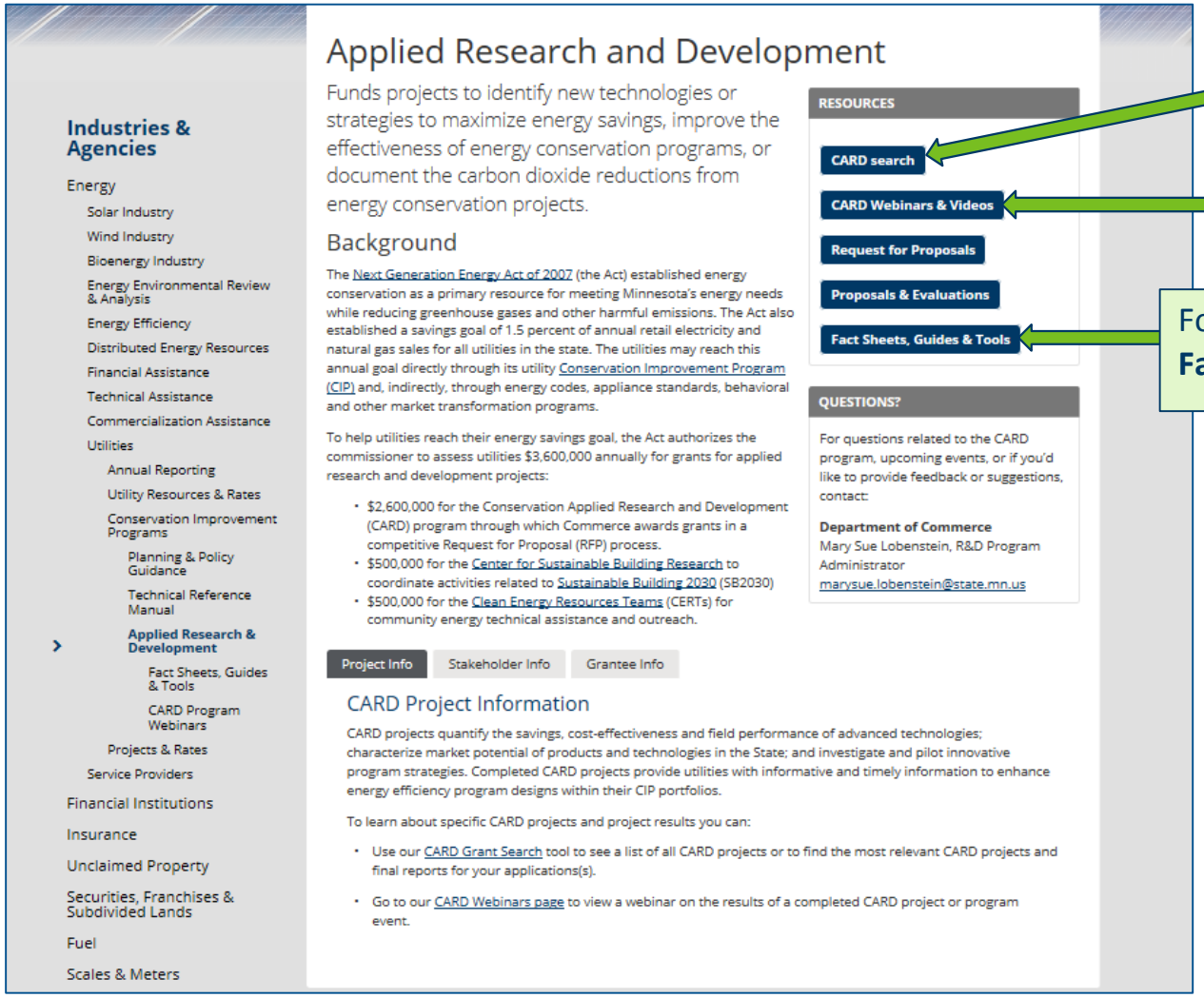
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Contact Information

CARD Project Resources



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Webinar Recording & Final Report
available in couple months

R&D Web Page (https://mn.gov/commerce/industries/energy/utilities/cip/applied-research-development/)

Thanks for Participating!

Upcoming CARD Webinars:

- **TBD** – Reconsidering Cooling Loads in Minnesota (Center for Energy and the Environment)
- **TBD** – Residential Energy Baseline and Market Characterization Study (Slipstream)
- **TBD** – Commercial Energy Baseline and Market Study Characterization Study (Slipstream)

Commerce Division of Energy Resources e-mail list sign-up

If you have questions or feedback on the CARD program contact:
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