



Welcome

Conservation Applied Research & Development (CARD)
Webinar

Statewide Commercial Behavior Segmentation and Potential Study



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Webinar Basics



- Attendees in listen-only mode
- Type your questions into Question Box
- Questions addressed at end
- Webinar recorded
- Handouts: slide deck & final report

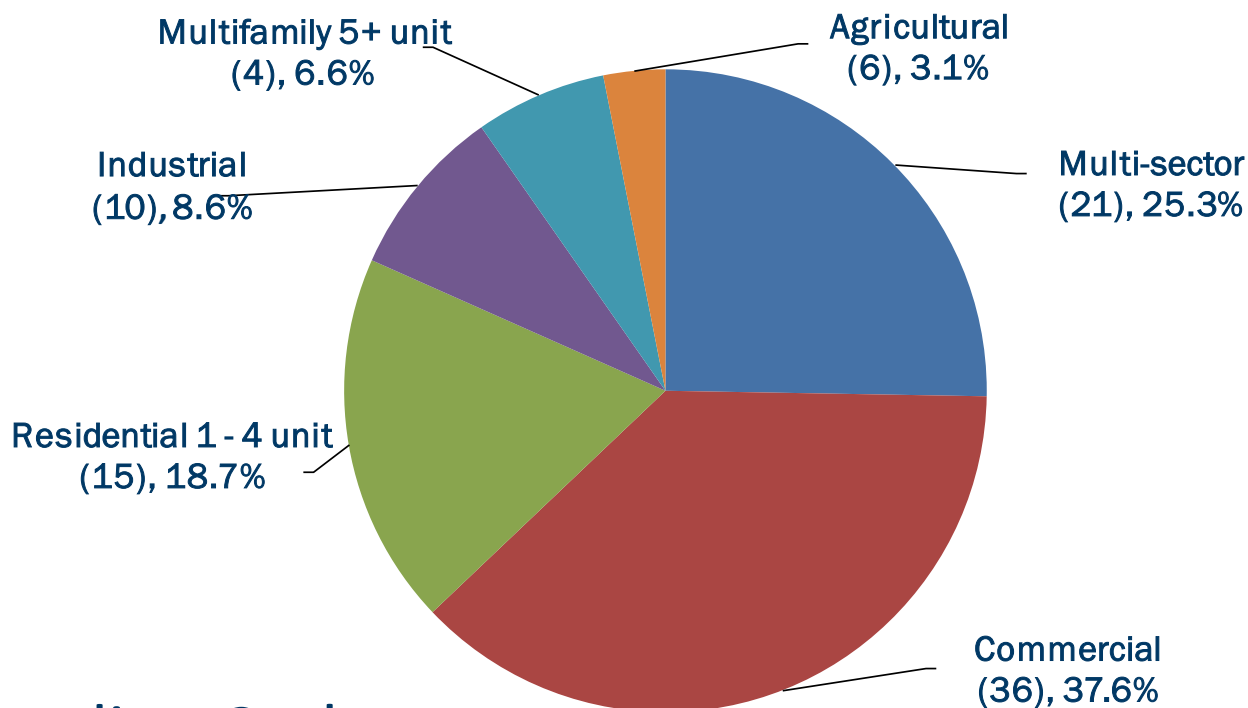
Minnesota Applied Research & Development Fund

- **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 CO₂ 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

CARD RFP Spending by Sector thru mid-FY2017



- 8 Funding Cycles
- Nearly 380 proposals
- 92 projects funded



- A pilot program designed to test ideas to **improve the effectiveness** of new construction energy efficiency programs in cooperative and municipal consumer-owned utility (COU) territories
- Explored how an energy design assistance (EDA) promotional effort can be effective in a range of Minnesota COU jurisdictions
 - EDA programs operated by investor-owned utilities (IOUs) have had a great track record for over 25 years in Minnesota and throughout the Midwest
- Barriers to broader application of the program to COUs are fairly well understood...
- Can the barriers be addressed?
 - At the utility level?
 - At the market level?



Key Concepts

- Energy use in buildings is the outcome of a complex interaction of the HVAC, lighting, and other internal loads, within the physical boundary conditions set by the envelope (roof, walls and windows)
- Performing a “net effect” calculation is complex – modeling tools enable designers to do so, within the limits of good inputs, available time, and budget
- Decisions made during initial design will affect energy use for the lifetime of that building; retrofits can make some degree of improvement, but the greatest opportunities exist during initial design



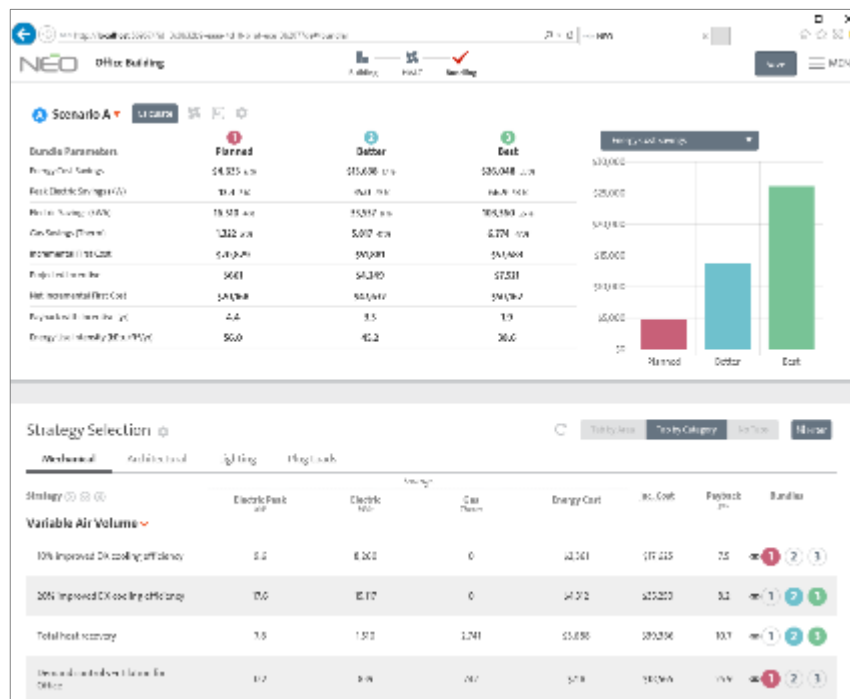
- Xcel Energy has offered a program, now known as Energy Design Assistance, since 1991
- The program provides energy modeling coupled with incentives based on the whole building, net performance of a package of energy efficiency measures
- Other IOUs – such as Otter Tail Power and CenterPoint – have implemented similar programs
- These programs have provided significant energy savings and are highly valued by design professionals, owners, and developers





EDA Features

- Free design assistance – includes energy modeling
- Prompt analysis of a wide range of options
- Incentives for energy-efficient measures
- Respect for design team constraints
 - Budgets
 - Schedules
 - Aesthetics
 - Operational concerns





- Design phase is *the* unique window of influence, with the return (savings) showing up after construction
 - Can be 2-3 years later
- Energy codes set a floor for energy performance
 - Codes are getting more stringent
 - Cost-effectiveness
 - Technologies are always advancing
 - Affects different building types in different ways
- Energy modeling has economies of scale
- Construction market is cyclical
 - Range of activity can drop to zero/year in certain smaller COU markets



- Use web-based technology to help recruit, enroll, and deliver services
- Look at key features associated with other successful programs and examine the degree to which those would be transferrable to COU situations
- Revise the analysis tool to include building types and sizes and associated energy saving strategies that would be common in the smaller buildings in greater Minnesota
 - Allow for rapid and cost-effective analysis to meet the anticipated needs of this market
 - Leverage similar tools used for other programs in Minnesota, Wisconsin, Iowa, and other jurisdictions

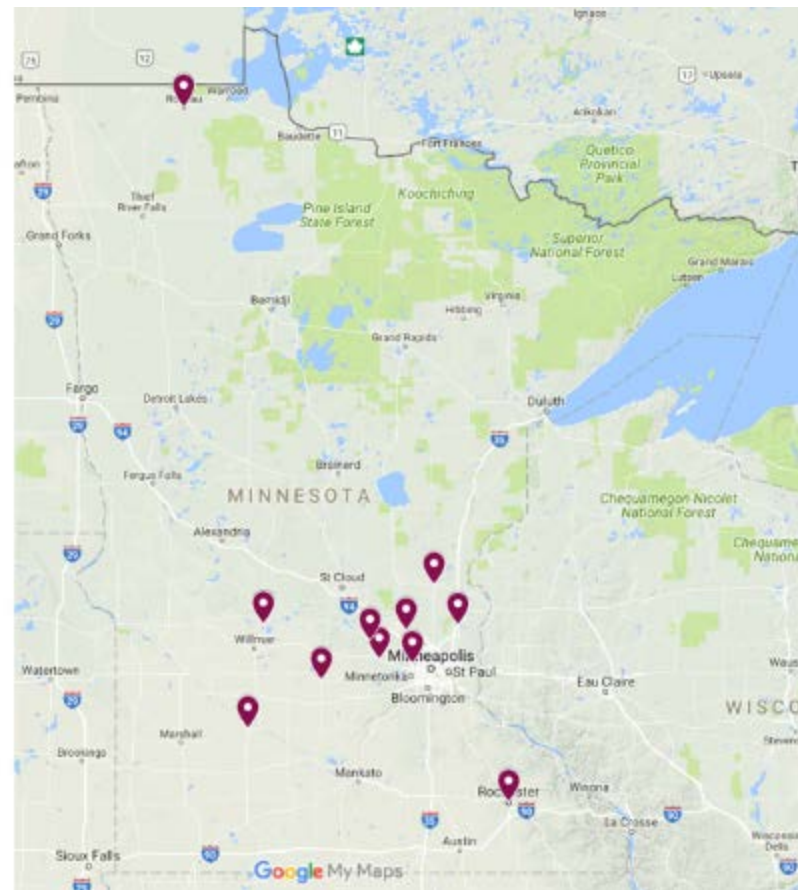


- A balance needed is between making the process easy for applicants yet allowing for enough detail to develop a quality analysis to fully capture energy-efficient options for the new construction project
- The tolerance of design teams in terms of the extra time associated with considering design alternatives was often less than larger, more complex projects
- When used during consulting meetings, slow internet connections could impeded the functionality of the tool



Projects Enrolled

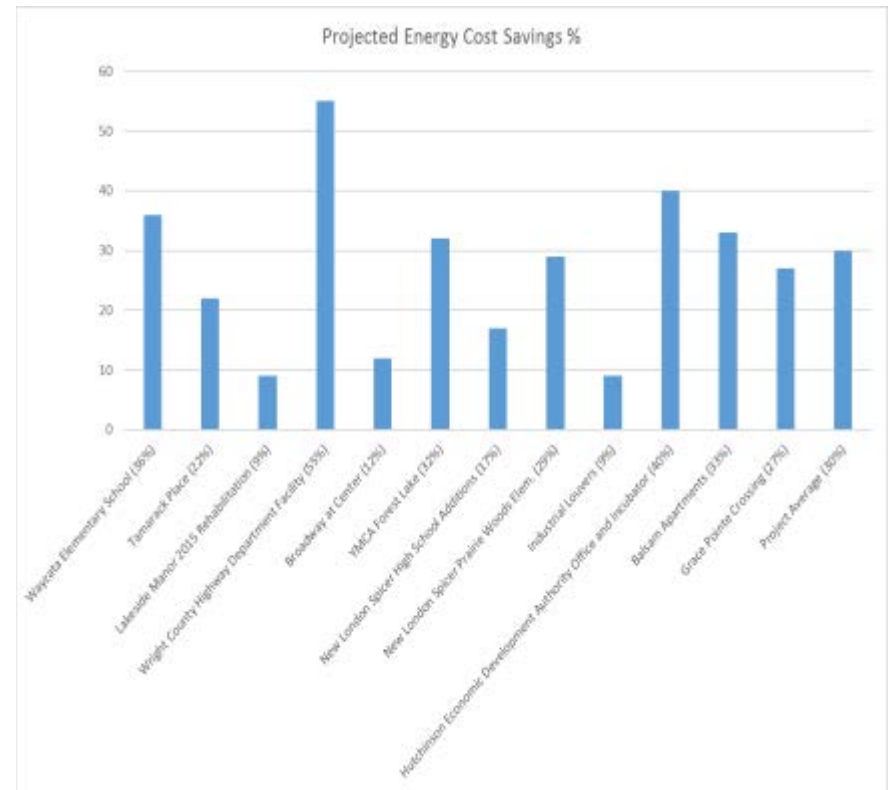
- The pilot reached 12 projects of various sizes, types, and locations
- Projects targeted from 2014 through mid-2016
- New construction, renovation/addition
- Schools, multi-family, transportation, recreation, and industrial
- Locations ranged from Roseau to Rochester, central MN, and outer metro





Estimated Savings

- Estimated total savings:
 - Energy cost: \$375,368
 - 9 at 55%; 30% average
 - Combined electric and gas:
 - 5 at 109 kBtu/sf
 - Electric peak: 545 kW
 - Electric consumption: 2,123,548 kWh
 - Gas: 29,790 Dth
- Incremental costs:
 - \$73,404 to \$1,734,705;
\$435,107 average
- Simple payback:
 - 3.7 to 42;
14.4 average (with utility incentives)





Incentives

- Savings verified:
 - 4 projects
 - 6 pending construction and verification
 - 2 dropped out
- Incentives:
 - COUs: \$139
 - \$106,448 paid out; \$32,653 anticipated
 - IOUs: \$77,000
 - \$17,679 paid out; \$59,325 anticipated
 - Additional incentives pending





- Incentive coordination and offerings varied, impacting program effectiveness
- Initial program design focused on providing analyses
- Participating utilities offered a variety of incentive approaches
 - Flat-rate
 - Custom, based on energy modeling, combined with prescriptive
 - Comparison of custom and prescriptive options
 - Offering prescriptive only



- Consistent and positive
 - Detailed information
 - Confidence in quantified energy savings
 - 3rd party evaluation and tracking
 - 3rd party recommendations
 - Evaluation during design phase
 - Early analysis assisted with budgeting
 - Involvement in team meetings
 - Potential to capture more savings
 - Facilitation and streamlining of incentive process



Owner/Design Team Feedback

- Positive overall
 - Options for individual strategies
 - Potential for total annual energy cost savings
 - Evaluation during design development
 - Making informed decisions
 - Validation
- Design team motivated to participate if compensated
- Utilities, owners, and design teams support facilitation of incentive process



Conclusions

- Design assistance works, no matter where the building is located
- Design assistance works best when provided as a minimally-intrusive partnership concept
- Incentives are a good carrot, but they need to be honored for the term of a typical construction cycle to be effective
- Catching projects during design can be more difficult in outstate jurisdictions
- Design processes are often less structured in outstate regions
- Most COUs do not have staff who are looking for projects that might be planned in their territory



Recommendations

- Mimic the features of successful Minnesota EDA programs:
 - Free initial analysis
 - Acknowledgement of the incremental design team effort
 - Incentives promised during design and paid upon completion of construction
- Budget for design assistance and incentives separately
- Use online options for enrollment and delivery, to expand geographic reach and reduce costs



Recommendations (cont.)

- The process for developing incentives needs to be done *in conjunction with* the analysis
 - Analyze savings
 - Calculate incentives
 - Present results TOGETHER
 - Repeat as design and questions evolve
 - KEEP IT SIMPLE
- Design team incentives or cost reimbursements were not offered, but should be considered
 - The market has been conditioned in Minnesota to expect this
 - The clearest way to respect their time and get to the table



Questions?

Send us your questions using
GoToWebinar question box

CARD Project Resources

Industries & Agencies

- Energy
 - Solar Industry
 - Wind Industry
 - Bioenergy Industry
 - Energy Environmental Review & Analysis
 - Energy Efficiency
 - Distributed Energy Resources
 - Financial Assistance
 - Technical Assistance
 - Commercialization Assistance
- Utilities
 - Annual Reporting
 - Rate Cases
 - Conservation Improvement Programs
 - Technical Reference Manual
- Applied Research & Development**
 - Projects & Rates
 - Service Providers
- Financial Institutions
- Insurance
- Unclaimed Property
- Securities, Franchises & Subdivided Lands
- Fuel
- Scales & Meters
- Retailers
- Telecom Provider

Conservation Applied Research and Development

Funds projects to identify new technologies or strategies to maximize energy savings, improve the effectiveness of energy conservation programs, or document the carbon dioxide reductions from energy conservation projects.

Background

The [Next Generation Energy Act of 2007](#) (the Act) established energy conservation as a primary resource for meeting Minnesota's energy needs while reducing greenhouse gases and other harmful emissions. The Act also established a savings goal of 1.5 percent of annual retail electricity and natural gas sales for all utilities in the state. The utilities may reach this annual goal directly through its utility [Conservation Improvement Program \(CIP\)](#) and, indirectly, through energy codes, appliance standards, behavioral and other market transformation programs.

To help utilities reach their energy savings goal, the Act authorizes the commissioner to assess utilities \$3,600,000 annually for grants for applied research and development projects:

- \$2,600,000 for the Conservation Applied Research and Development (CARD) program through which Commerce awards grants in a competitive Request for Proposal (RFP) process.
- \$500,000 for the [Center for Sustainable Building Research](#) to coordinate activities related to [Sustainable Building 2030](#) (SB2030)
- \$500,000 for the [Clean Energy Resources Teams](#) (CERTs) for community energy technical assistance and outreach.

RESOURCES

- CARD search
- CARD Webinars & Videos
- Request for Proposals
- Proposals & Evaluations [↗](#)

QUESTIONS?

For questions related to the CARD program, upcoming events, or if you'd like to provide feedback or suggestions, contact:

Department of Commerce
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Program Updates

CARD Program Updates

FY 2017 CARD RFP

Two CARD Request for Proposals (RFPs) have been posted for fiscal year 2017:

For Reports use CARD Search Quick Link

For Webinars use CARD Webinars & Videos Quick Link

Webinar Recording available in few weeks

Final Report [Link](#)

[CARD Web Page](https://mn.gov/commerce/industries/energy/utilities/cip/applied-research-development/) (https://mn.gov/commerce/industries/energy/utilities/cip/applied-research-development/)



Thanks for Participating!

Upcoming CARD Webinars:

- **September 25:** Field test of high frequency battery chargers
- **October 5:** Assessment of cold climate air source heat pumps

[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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