

Illinois Energy Efficiency Stakeholder Advisory Group

2020 SAG Portfolio Planning Process
Proposed Energy Efficiency Ideas Template

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Energy Efficiency Idea Questions

Please check the boxes below to identify 1) the type of idea; 2) which Illinois utility or utilities will be impacted by the idea; and 3) which EE sector the idea impacts.

Check	Type of Energy Efficiency Idea
<input checked="" type="checkbox"/>	New Measure or New Program Idea
<input type="checkbox"/>	Proposed Program Approach
<input type="checkbox"/>	Innovative Idea

Check	Illinois Utility Impacted by Energy Efficiency Idea
<input checked="" type="checkbox"/>	Ameren Illinois
<input checked="" type="checkbox"/>	ComEd
<input type="checkbox"/>	Nicor Gas
<input type="checkbox"/>	Peoples Gas & North Shore Gas

<input type="checkbox"/>	All Illinois Utilities
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Check	Energy Efficiency Sector Targeted by Energy Efficiency Idea
<input type="checkbox"/>	Residential Customers – Single Family (non-income qualified/income eligible)
<input type="checkbox"/>	Residential Customers – Multifamily (non-income qualified/income eligible)
<input type="checkbox"/>	Residential Customers – Single Family Income Qualified/Income Eligible
<input checked="" type="checkbox"/>	Residential Customers – Multifamily Income Qualified/Income Eligible
<input type="checkbox"/>	Small Business Customers (commercial & industrial sector)
<input type="checkbox"/>	Medium/Large Business Customers (commercial & industrial sector)
<input type="checkbox"/>	Other (research & development, emerging technologies, market transformation)

Additional Questions

1. **Description of Idea:** Describe the proposed idea, including the purpose of the suggested idea and rationale. Describe whether this is an idea that could be implemented in an existing EE program, or whether the idea involves establishing a new measure or program. Please indicate whether additional research may be required before implementation.

Questions to consider: What issue will this proposed change resolve? Will the proposed change increase participation and result in increased energy savings? Will this reduce costs? Will this increase customer satisfaction? Will this help achieve statutory goals? Will this help increase program penetration?

Cold Climate Heat Pump Retrofits in IQ Electric Resistance Heated Multi-Family Buildings. According to its 2015 Potential Study (Vol. 2, Figure 3-2), approximately 60% of Ameren’s IQ customers living in Multi-Family buildings heat with electricity. According to ComEd’s 2013 Saturation Survey, approximately 24% of all its customers living in multi-family buildings use electricity as their primary heating fuel (another 18% appear to use it as a secondary heating source; low income specific data are not available for ComEd. The vast majority of IQ multi-family electric heat in both utility service territories is likely to be inefficient electric resistance heat. Cold climate heat pumps should be able to provide heat 2 to 3 times more efficiently, providing greater savings than all other possible efficiency measures combined for homes heating primarily with electricity. Note that such heat pumps now come in two primary forms: centrally ducted systems (with back-up resistance coils integrated into the air handler) to completely displace electric furnaces distributing heat through forced air systems, or displace electric resistance baseboard heat when there is already a central A/C system with duct work; and ductless mini-splits to displace electric resistance baseboard heat (but where the baseboard heaters can remain as back-up for extremely cold days. For larger multi-family buildings, it may also be worth considering variable refrigerant flow (VRF) systems.

As part of a “one-stop shop” program design (see NRDC IQ MF program enhancements proposal), delivery of the cold climate heat pump measure in IQ multi-family buildings should be integrated with cost-effective

building envelop measures (to maximize benefits of the heat pump, allow downsizing and improve occupant comfort), as well as other efficient electric appliances and low cost DI measures. In that sense, this should really be just a measure emphasized within a broader IQ multi-family program. However, because it has had little promotion to date in IL (other than ComEd's current 80-unit pilot and a few dozen units installed by Ameren), and because it swamps savings potential from all other measures for those buildings for which it is applicable, we thought it important to specifically call out in separate write-up.'

Also, specific recommendations flowing from the not yet available ComEd pilot program report (expected in May 2020) should be adopted. That may include recommendations for optimizing controls (e.g. outdoor temperature lockout, but with customer over-ride option), bulk procurement to lower costs, focus primarily on single head system when using ductless mini-splits, and other features.

2. **Implementation:** How will this idea be delivered to the target market? Describe marketing strategies used to reach the target market and minimize market confusion.

As noted above, delivery of this measure should be integrated with delivery of other cost-effective IQ multi-family measures through a single integrated, one-stop-shop IQ MF program. In that sense, it simply needs to be delivered through expansions of the electric utilities' current IQ MF whole building programs. However, effort to identify recruit trained installation contractors will be needed.

Also, effort to target market to electrically-heated IQ MF buildings, leveraging the utilities' billing data, will also likely be necessary.

3. **Background:** Describe where the idea originated from, including whether this idea has been successfully implemented in other jurisdictions. Provide specific background information that will help utilities and SAG participants understand the proposed idea.

Questions to consider: In what jurisdiction has this idea been successfully implemented? Do you have information on eligible customers, participation achieved, and/or savings achieved? Do you have access to reports describing the successful idea / program approach?

NRDC has raised this idea within the SAG for many years, as part of the utilities' 2017 plan filings (including the ComEd settlement to run its current pilot), and more recently as well. There are lots of studies, including ComEd's pilot, that suggest savings potential could be on the order of 50% or more of space heating needs – when controls are optimized and/or when customers operate the systems themselves in optimal ways.

4. **Idea Impact:** Provide additional information on the customer segment that will be targeted with the program idea, including how and why this idea will have a positive impact on customers participating in Illinois EE programs.

Questions to consider: What level of impact will this idea have on current EE programs? How much additional market share do you estimate this change will impact?

Huge savings potential per participant. See discussion above.

5. **Duration:** Is this idea intended to be offered for the duration of the 4-year EE Plan or as a pilot measure or program?

Full-scale program for entirety of next plan cycle (and beyond)

6. **Estimated Budget:** Provide the total estimated budget for each program year (2022 – 2025).

If integrated into existing whole building IQ MF programs, budget impact should be primarily the cost of the heat pumps and related controls, though there would be some marketing and QC costs too. At scale/volume,

we would expect the total cost to be on the order of \$5k per single head ductless mini-split and \$10k per unit for centrally-ducted systems to displace electric furnaces or central A/Cs. We assume that it would be necessary to pay 100% of the cost in the first year to get traction, then ramp down to require a co-pay from MF building owners (we assume 25% to start) in subsequent years. Any co-pay could be financed on-bill. Most would likely be ductless mini-splits (assuming most resistance heat is electric resistance baseboard and that there is little ducted central A/C in IQ multi-family buildings). Based on participation numbers below, we would expect the budgetary impacts to be on the order of \$3 million for each electric utility in 2022, ramping up to \$5 million/year in 2024 and 2025 for each utility. That would be just for the heat pump measures – i.e. a subset of the total IQ multi-family program costs proposed in a separate NRDC program idea proposal.

7. **Estimated Participation:** Provide participation totals for each program year (i.e. number of measures installed, number of customer participants, etc.)

Suggested participation rates for both Ameren and ComEd of 500 electrically-heated apartments in 2022, 750 in 2023, 1000 in 2024 and 2025 (though Ameren is much smaller, it has a much higher saturation of electric heat in IQ MF so we assume similar participation levels are possible).

Sources

If any sources will be useful to Illinois utilities in reviewing ideas, please either provide links within this template or send attachment(s) to the SAG Facilitator with the Energy Efficiency Idea submittal.