



Memorandum

To: Erin Daughton, ComEd, Jennifer Morris, ICC

From: Kumar Chittory, Verdant Associates; Jeff Erickson, Rob Neumann, and Rick Berry, Guidehouse

Date: June 21, 2021

Re: Eligibility of Renewable Energy Measures within Energy Efficiency Programs

INTRODUCTION

ComEd's Custom Program implementation team raised a question about the eligibility of measures that include renewable energy components for incentives under the energy efficiency umbrella. This topic was discussed in a call with ComEd, ComEd's implementation contractor, ICC staff, and Guidehouse staff. It seemed to that group that it is appropriate that measures that receive funding through a renewable energy pathway should not also get funding through the energy efficiency pathway. However, it was not clear where the dividing line should be for a variety of measures that might see support via energy efficiency. The group agreed that a further discussion was necessary, including representatives from gas and electric utilities since the issue could apply to all. The key question that needs answering is: *what defines the boundary between energy efficiency and renewable energy?* This memo will lay out some of the technical and regulatory issues to support a discussion designed to define that boundary.

This will be a topic for discussion at the Illinois Stakeholder Advisory Group (SAG) evaluation working group call on July 14th.

LIST OF POTENTIAL MEASURES

Table 1 provides a list of measures that illustrate the range of measures that should be considered for eligibility for EE funding. It does not necessarily represent all such measures but provides a range to illustrate the technical issues that have come to light in the beginning research. The intention is to provide a list of measures to support further discussion. The list includes both solar photovoltaic (PV) and solar thermal technologies and the footnotes give links to specific examples.

The evaluation working group should consider defining rules that will cover more than just these specific measures but provide general principles for determining eligibility. It may be that such rules, or specific measures, can be incorporated in the TRM.

Table 1. Potential Measures

Potential Measure	Grid Connected	Electric	Gas
Lighting			
PV Exterior Lights with battery ^{1,2}	No	X	
PV Exterior Lights without battery	Yes	X	
Indoor Lights Powered by Outdoor PV ^{3,4}	No	X	
Indoor Lights Powered by Outdoor PV	Yes	X	
PV Walkway Lights ⁵	No	X	
PV Walkway Lights	Yes	X	
Solar Thermal			
Solar Thermal Hot Water	No	X	X
Solar Thermal Pre Heaters (outdoor air ventilation) ⁶	No	X	X
Solar Thermal Space Heating	No	X	X
Solar Pool Heaters	No	X	X
Space Conditioning⁷			
PV Powered Attic Fans ⁸	No	X	
PV HVAC or Heat Pump Units ⁹	No	X	X
PV HVAC or Heat Pump Units	Yes	X	X
Other			
PV attached to specific equipment	?	?	?

DEFINITIONS AND REQUIREMENTS FROM THE LEGISLATION

Recent Illinois EE and renewable legislation (20 ILCS 3855/1-10)¹⁰ provides definitions of “energy efficiency” and “renewable energy resources” which provides a starting point for this discussion.

"Energy efficiency" means measures that reduce the amount of electricity or natural gas consumed in order to achieve a given end use. "Energy efficiency" includes voltage optimization measures that optimize the voltage at points on the electric distribution voltage system and thereby reduce electricity consumption by electric customers' end use devices. "Energy efficiency" also includes

¹ Example: Solera's Hybrid 365. <https://solera-solar.com/product/hybrid-365-area-light/>

² Example: Solera's Off-Grid Bollard. <https://solera-solar.com/product/off-grid-bollard/>

³ C&I Example: energy bank's Fusion. <https://energybankinc.com/wp-content/uploads/2020/08/BR-FUSION-Intro.pdf>

⁴ Residential Summary: <https://www.ecomasteryproject.com/indoor-solar-lights/>

⁵ Example: Balhvit's XLTD-1808. https://www.amazon.com/Balhvit-Waterproof-Stainless-Landscape-Lighting/dp/B08F7SV45N/ref=sr_1_6?_encoding=UTF8&c=ts&dchild=1&keywords=Landscape+Path+Lights&qid=1623362629&s=lamps-light&sr=1-6&ts_id=14193171

⁶ Example: SolarWall's Single-Stage system. <https://www.solarwall.com/technology/solar-wall-single-stage/>

⁷ Some may be eligible for federal tax credits.

⁸ Example: Solatube's Attic Fan. <https://www.solatube.com/residential/attic-fans/>

⁹ Example: Lennox's SunSource. https://www.lennox.com/lib/legacy-res/pdfs/brochures/sunsource_home_energy_system.pdf

¹⁰ <https://www.ilga.gov/legislation/ilcs/documents/002038550K1-10.htm> and <https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=2934&ChapterID=5>

measures that reduce the total Btus of electricity, natural gas, and other fuels needed to meet the end use or uses.

"Renewable energy resources" includes energy and its associated renewable energy credit or renewable energy credits from wind, solar thermal energy, photovoltaic cells and panels, biodiesel, anaerobic digestion, crops and untreated and unadulterated organic waste biomass, tree waste, and hydropower that does not involve new construction or significant expansion of hydropower dams. For purposes of this Act, landfill gas produced in the State is considered a renewable energy resource. "Renewable energy resources" does not include the incineration or burning of tires, garbage, general household, institutional, and commercial waste, industrial lunchroom or office waste, landscape waste other than tree waste, railroad crossties, utility poles, or construction or demolition debris, other than untreated and unadulterated waste wood.

"Distributed renewable energy generation device" means a device that is:

- (1) powered by wind, solar thermal energy, photovoltaic cells or panels, biodiesel, crops and untreated and unadulterated organic waste biomass, tree waste, and hydropower that does not involve new construction or significant expansion of hydropower dams;
- (2) **interconnected at the distribution system level** of either an electric utility as defined in this Section, a municipal utility as defined in this Section that owns or operates electric distribution facilities, or a rural electric cooperative **[highlight added]**

A key point documented in the renewable energy resources paragraph, above, is that a renewable resource must be associated with a renewable energy credit or credits to be eligible under Illinois law and it must be connected to a utility grid (see the highlighted phrase). It appears that this definition leads to the conclusion that a system that uses renewable energy and isn't connected to the grid, and one that isn't eligible for a renewable energy credit, would not be confined by the parameters of other Illinois renewable energy requirements and could be considered for inclusion under EE programs.

SAVINGS ESTIMATION ASSUMPTIONS

As the evaluation working group and SAG consider whether some of these renewable-energy powered measures could be included under EE programs, decisions will have to be made on key assumptions for calculating savings. Probably the most significant questions are around determining the baseline and incremental costs. The condition or energy use if the measure were not installed needs to be defined. These examples illustrate some of the issues:

1. If the measure is grid-connected, from wiring that is already present, and the grid power provides the backup for times when the sun is not shining, then the savings may simply be the output of the solar system as it directly offsets grid-supplied energy.
2. For a solar thermal pre-heater for outdoor air ventilation, the baseline probably should assume that the outdoor air is not pre-heated.
3. If the measure is not grid-connected (e.g., a solar attic fan or exterior lighting) should the baseline be the installation of the same measure but with direct wiring to the grid? Or should the baseline be no measure? In the case of "no measure" baseline for a solar attic fan, it will

save cooling energy with no offset for the fan energy. In the case of “no measure” baseline for exterior lighting, there would be no energy savings (i.e., the measure provides a benefit of added light but not of saving energy).

4. If the solar measure was not installed, would the customer have paid for an electrician to wire up a non-solar measure? Is the measure replacing an existing, wired system?

Some of these questions could be resolved by evaluation in ex-post research (as in ‘What would the customer have installed if they had not installed the solar system?’) but that leaves savings open to retrospective evaluation.