# Feedback Form

## Distributed Energy Resources (DER) Potential Study – November 23, 2021

### Feedback Provided by:

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Date: 12/14/21

Following the November 23rd public webinar on the DER Potential Study, the Independent Electricity System Operator (IESO) and the consultant, Dunsky supported by Power Advisory, are seeking feedback from participants on the approach for technical, economic and achievable potential analysis, regional segmentation, market barriers, as well as input on the scenarios.

The referenced presentation and associated MS Excel worksheet (with the full list of DER measures, measure screening results, and approach) can be found on the DER Potential Study webpage.

**Please provide feedback by December 14, 2021 to engagement@ieso.ca.** Please use subject header: *DER Potential Study*. To promote transparency, this feedback will be posted on the DER Potential Study webpage unless otherwise requested by the sender.

The IESO and its consultant will work to consider and incorporate comments as appropriate and post responses on the webpage.

Thank you for your contribution.

## Approach for technical, economic and achievable potential analysis

| Topic | Feedback |
|---|---|
| General input on the proposed approach for evaluating DER Potential. | EnergyHub is supportive of the proposed approach to evaluating DER potential as summarized on slide 19, including the notion that achievable potential is not exclusively a subset of economic potential. |
| General input on the proposed market and measure characterization approaches. | EnergyHub is supportive of the proposed market and measure characterization approaches, including the technical measure sizing and baseline profile parameters (e.g., nameplate capacity and end-use load characterization for DR). |
| Ontario-specific considerations or data sources that the team should employ in the study. | EnergyHub estimates that there are 400k total internet-connected (i.e., controllable) thermostats in Ontario based on aggregated data shared by EnergyHub's thermostat partners. Of thermostats for which fuel source data was reported to us, approximately 95% were configured for central AC, implying that ~5% of all devices represent gas-only systems. In a subset of postal codes in the province, EnergyHub observed a 250% growth of the installed base from 2018 to 2021. The IESO and consultant can expect 0.5-1.0 kW of load shed per device on average, inclusive of offline devices and opt-outs (and otherwise incompatible devices) as input into the achievable potential of the AC thermostat resource. Actual load shed depends on regional characteristics (housing stock, climate), and the load control strategy used (e.g., depth of temperature setpoint offset, average event duration, event window). All customer segments (i.e., residential, small commercial) and end uses (e.g., ASHP in addition to central AC) are included in the estimated installed device base mentioned above. |

## Regional segmentation

| Topic | Feedback |
| --- | --- |
| Should the regional segmentation align with actual geographic regions, or should they reflect different characteristics/conditions (e.g. urban vs. rural)? If the latter, what types of characteristics/conditions should be used to define these segments and how might they be varied? | EnergyHub supports the notion that regional segmentation should account for similar characteristics/conditions, rather than geographic region. End-use load characteristics vary based on the climate, and therefore weather-sensitive loads like HVAC – and associated measures – are more sensitive to regional conditions than specific geographies. For example, climate influences building stock characteristics, which in turn influence residential measure potential. Cooler climates may facilitate the deployment of smaller HVAC compressor sizes, on average, relative to warmer climates. Even if compressor sizes were nearly equal among climate zones, cooler weather tends to yield lower baseline load for DR purposes, as HVAC units run less often (i.e., lower load factor).<br><br>Similarly, the prevalence of single-family/detached homes to multi-unit dwellings or large apartment complexes will impact the achievable potential of AC thermostats, residential L2 EV chargers, BTM solar + storage and other measures that depend on certain housing conditions for interconnection (e.g., available land, rental agreements). Nameplate HVAC compressor size for single-family homes might average around 3kW, while equipment sizes for MUD/multi-family properties tend to be smaller. |

## Market barriers

| Topic | Feedback |
| --- | --- |
| What specific participation barriers should be considered in assessing the achievable potential for DERs? Please speak to specific market participation barriers (e.g. participation thresholds) and non-market participation barriers (e.g. M&V requirements for residential demand response)? | EnergyHub refers back to comments submitted by AEMA on October 13, 2021 in response to the DER Potential Study session on September 22, 2021.<br><br>In summary, market barriers include the lack of availability of consistently formatted LDC meter data for M&V, lack of meter data granular enough to enable aggregated residential DR/DER resources to participate in the Operating Reserve market, market settlement at the retail delivery point (i.e., sub-metered loads or DER-level consumption data not allowed), minimum aggregation size for aggregated DR/DER greater than 100kW, any absence of DR baselines appropriate for weather-sensitive DR resources, requirements for real-time telemetry for participation in the IESO-administered markets, nodal aggregation requirements (e.g., is a DER resource restricted to a single pricing node, or can a DER resource be aggregated up to the Zonal level?), and capacity accreditation (do the IAMs assess DER/DR resources based on their technical and contractual capabilities, which may vary throughout a given capacity auction delivery year).<br><br>Non-market barriers include incentives (or lack thereof) for LDCs to introduce retail DR programs/tariffs in their territories, enrollment requirements (e.g., customers being required to provide their LDC account number or other unique ID as part of DR enrollment), any separate data authorization step that might contribute to decreased enrollment/retention (e.g., Green Button authorization required for LDC DR program participation), low retail enrollment/participation incentives for DER/DR programs, a lack of LDC-administered time-varying rates that would promote DER adoption (especially batteries, EVs), and the extent to which LDCs are able to support program awareness marketing and contributor outreach for any DER/DR initiatives. |

## Input on scenarios

| Topic | Feedback |
|---|---|
| Are the five proposed scenario levers appropriate for this study? | We are supportive of the proposed levers. The IESO might consider an additional lever that reflects the regulatory environment's impact on the existence of DER/DR incentives and programs introduced by the local distribution companies. It can be the case that potential studies, even when illustrating high levels of achievable potential for DR/DER, don't materialize as real customer-facing DR/DER programs at the LDC level. A regulatory environment that would *require* the implementation of cost-effective measures by all LDCs (while considering equity and reasonable opt-out thresholds for small entities) - would be a crucial factor in determining whether the population of DR/DER resources proliferating at the grid edge can actually be made available to the grid |
| How might the project team incorporate and vary non-market participation related barriers in the three scenarios? | Example illustrated below, as a basic starting point:<br>Scenario 1 (Low) – LDC DR program implementation remains voluntary, burdensome customer enrollment requirements, low retail incentives<br>Scenario 2 (Med) – Some LDC DR program implementation required, seamless customer enrollment via LDCs/aggregators, moderate retail rates or incentives for DER/DR program participation<br>Scenario 3 (High) – LDC DR program implementation required for all cost-effective measures, seamless enrollment, attractive retail DER/DR program incentives |
| The three scenarios are intended to reflect distinct futures where the role of DERs may vary significantly. How could the levers be changed across scenarios to derive the most useful results from this study? | As stated above, a regulatory requirement to implement customer programs reflective of the cost-effective measures identified in the study is critical to translate potential into reality. Achievable potential can only be realized if DER have viable pathways to deliver value to the distribution system or IESO-administered markets. Simply put, if LDC DR programs remain voluntary, DER/DR are unlikely to reach their economic potential. Varying the extent to which customer-facing programs or tariffs are implemented at the retail level could be a logical way to incorporate this concept into the scenarios. |

## General Comments/Feedback

EnergyHub appreciates the opportunity to provide input into the DER Potential Study project and we look forward to continued participation in the IESO's overall market design initiative.