

UM 2011 – Capacity Workshop #2

Portland General Electric
October 24th 2019



Purpose of UM 2011

UM 2011 is a general investigation focused on three questions:

- 1. *What is capacity?***
- 2. *How is capacity acquired?***
- 3. *How should capacity be valued?***

- Order 19-155 adopting the scope of UM 2011 supports a general investigation examining appropriate method(s) for capacity valuation.
- PGE understands that this investigation is aimed at ensuring a common framework of understanding of appropriate assumptions to value capacity.
- PGE believes a more rigorous and robust process is necessary to create common methodologies for capacity valuation for each utility.

Primary Questions

UM 2011 is a general investigation focused on three questions:

1. *What is capacity?*
2. *How is capacity acquired?*
3. *How should capacity be valued?*

What is capacity?

The ability to meet load (expressed in MW) at any point in time. Capacity is capable of providing energy when needed. The dependable ability to create energy when needed is distinct from the produced energy itself.

Primary Questions

UM 2011 is a general investigation focused on three questions:

1. *What is capacity?*
2. *How is capacity acquired?*
3. *How should capacity be valued?*

How is capacity acquired?

Capacity is acquired through obtaining rights to output from capacity producing resources. Capacity acquisitions take place through competitive procurement, program management, and/or bilateral agreement. Capacity cannot be acquired in wholesale market exchanges.

Primary Questions

UM 2011 is a general investigation focused on three questions:

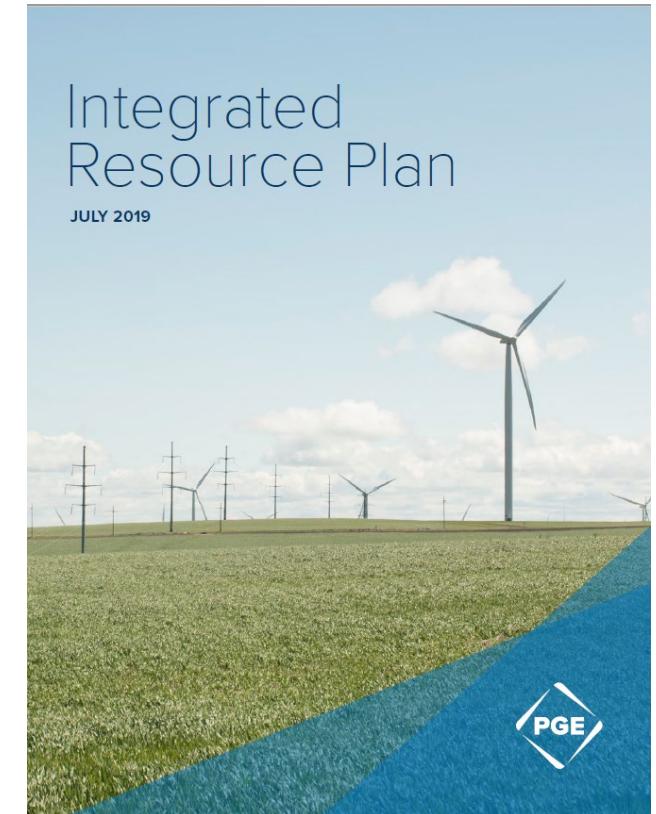
1. *What is capacity?*
2. *How is capacity acquired?*
3. *How should capacity be valued?*

How should capacity be valued?

A capacity resource's value should be based on the fulfillment of capacity resource need and the avoided cost of a new resource. The fulfillment of need is expressed through the measured capacity contribution of the resource. The cost of the avoided action should reflect the cost of new entry, decreased by the non-capacity benefits provided to the system (Net CONE).

How to Measure Capacity?

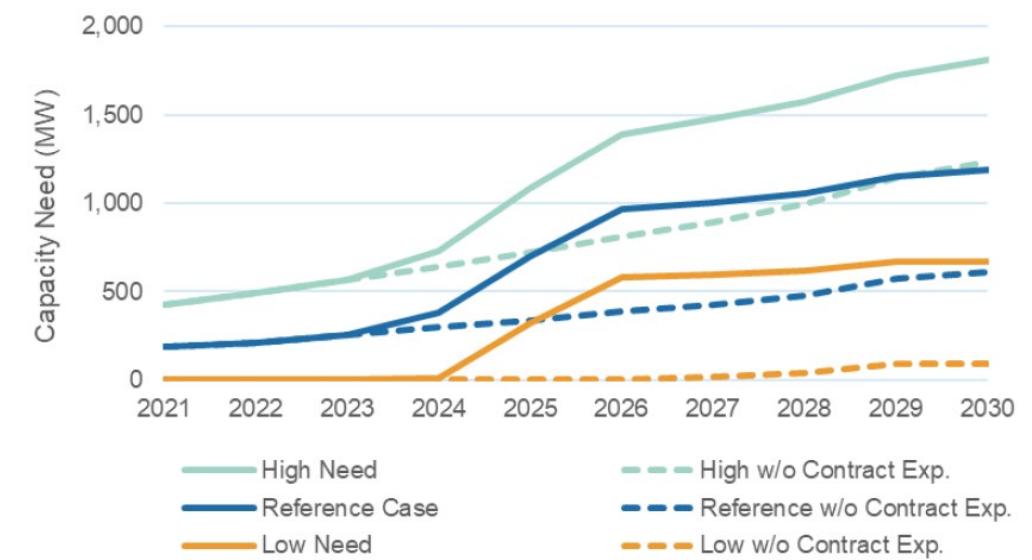
- Capacity contribution based on the probabilistic behavior of loads and generation.
- Studied within IRP using loss of load expectation (LOLE) based modeling methods.
- PGE plans for capacity necessary to meet a 1 day in 10 year reliability standard.
- For additional information see PGE's UM 2011 June 11th 2019 workshop materials or PGE's 2019 IRP.



Why Acquire Capacity?

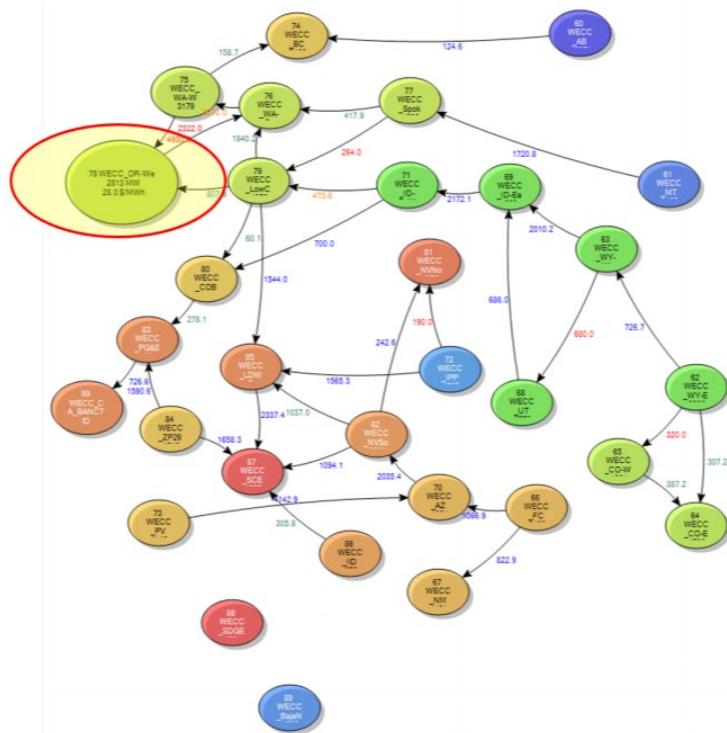
- Capacity is needed to meet resource adequacy targets on a planning basis, and to meet load and reserve requirements on an operational basis.
- The decision to acquire capacity is fundamentally driven by reliability requirements and potential customer demand, not economics.
 - Selection criteria for incremental capacity resource decisions remain based upon least-cost, least-risk principles.

FIGURE ES-1: Future capacity needs under various scenarios



Limitation of Energy Markets

FIGURE I-3: WECC topology – example of hourly price and interchange



- Wholesale exchanges in the West trade energy-only products.
- Energy markets allow participants to efficiently match supply and demand – energy markets do not increase supply or provide new capacity resources.
- Traded commodity products do not convey capacity rights to specific resources and excuse failure to deliver through financial settlement.
- Participation in EIM conditioned on demonstrating resource sufficiency prior to scheduling period.

How to Acquire Capacity?

Lead Time	Supply-Side Resources	Description	Example Outcome
5+ Years Out (e.g. 2024+)	Competitive Procurement	Competitive Bidding Rule compliant RFPs resulting in long-term commitments for capacity resources. Allows for financial commitment and lead time to support new resources.	Twenty-year contract for new pumped storage facility.
2- 4 Years Out (e.g. 2021-2023)	Structured Contracts	Medium-term contracts for existing resources. Contract structured with mutually agreed upon terms including rights to receive delivery from specified resource or system of resources.	Five-year call-option backed by hydro operator system.
Within 2 Years (e.g. 2019-2020)	Bilateral Term Agreements	Short-term contracts for existing resources. Contracted for using standardized agreements including delivery from specified resource.	Q1 heat-rate call option backed by existing CCCT.

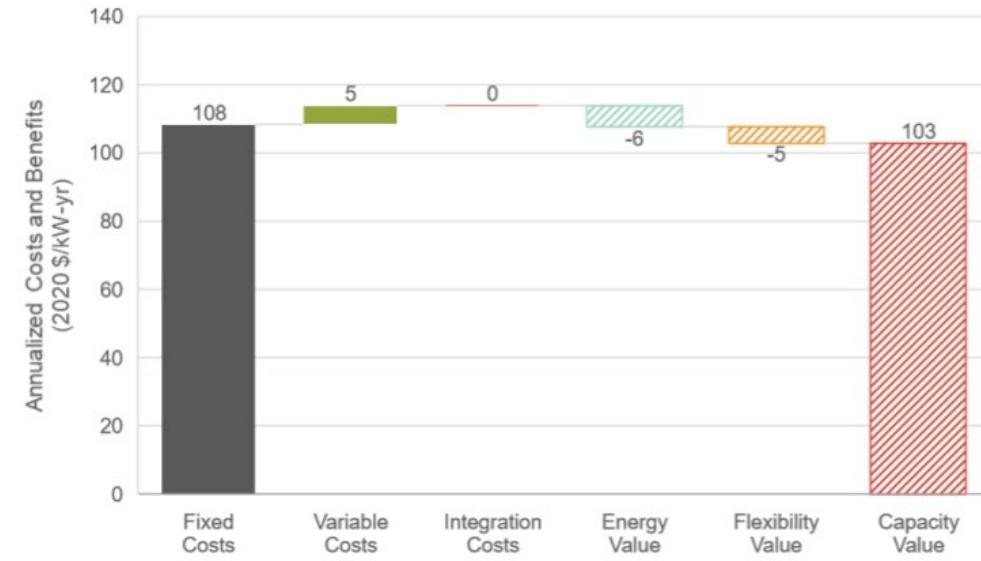
Demand Side Differences

- Demand side resources, including energy efficiency and demand response, are acquired programmatically.
 - Program development grows incrementally and requires sustained intervention to influence behavior or incent participation.
- Program development and intervention remains constant across all procurement timeframes to meet long-term goals.



Valuation Implications

- The expected costs of capacity products should converge to “Net Cost of New Entry” prices for similar capacity resources.
 - Prices far below Net CONE costs indicate conditions of regional capacity length.
 - Prices above Net CONE costs indicate conditions of insufficient regional supply constrained by lead time associated with new resources.



Valuation Implications Cont.

- Capacity needs are driven by infrequent circumstances. Resource adequacy needs persist even under average conditions when the need for capacity in the short-term is not immediate.
 - Whereas increasing system energy needs can be met with increased dispatch, increasing system capacity needs require new resources.
- New resources require certain financial commitments and sufficient long-lead times.
- Cost of New Entry prices may be required to provide long-term price signal for incremental capacity resource builds.