IPL Future Generation

Presented on January 11th, 2021

INDEPENDENCE
★ POWER & LIGHT ★

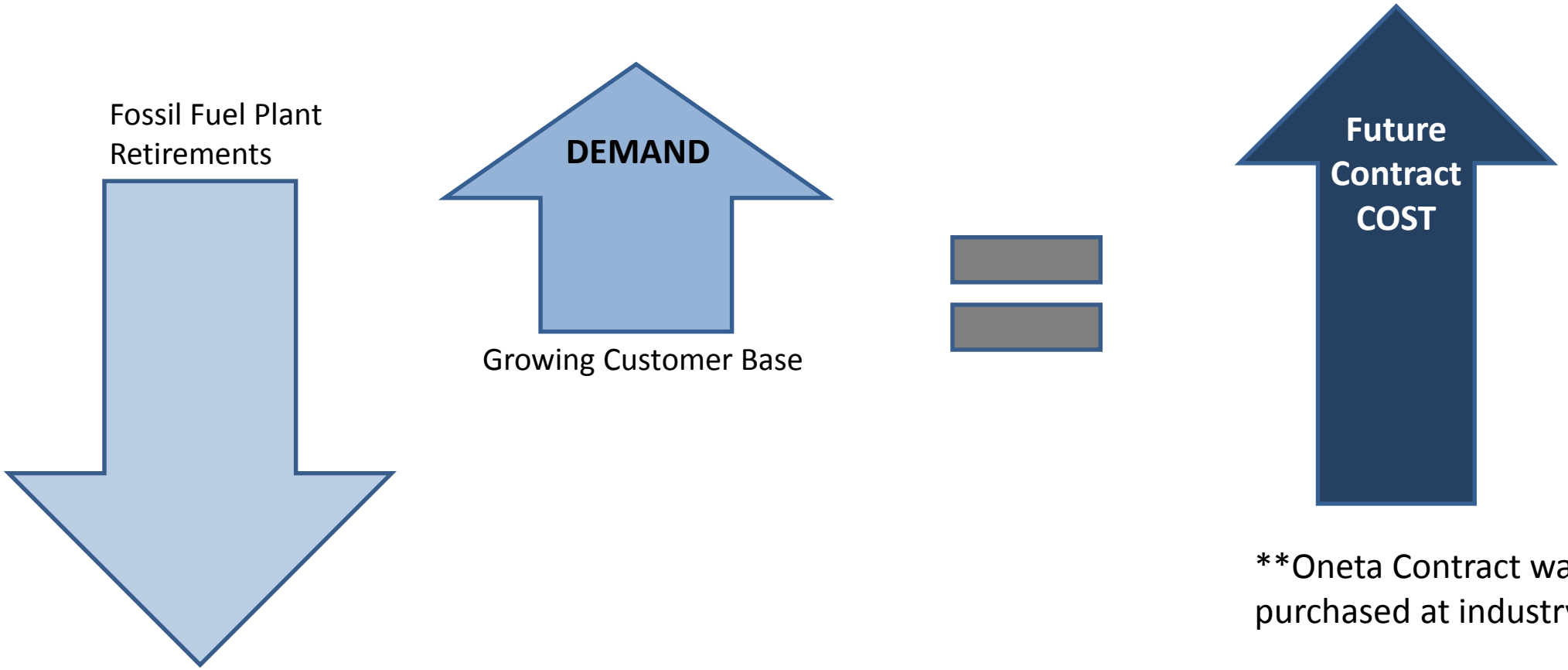
Power generation resources serve (3) purposes

- **Energy** – the actual amount of electricity needed to power customers
- **Capacity –** the maximum amount of electricity a generator can produce per hour
  - Tells us how much electricity we could produce ‘just in case’
- **System Reliability –** generators ensure there is the right amount of electricity and voltage across the grid

IPL HAS (3) OPTIONS TO ACCESS POWER GENERATION RESOURCES

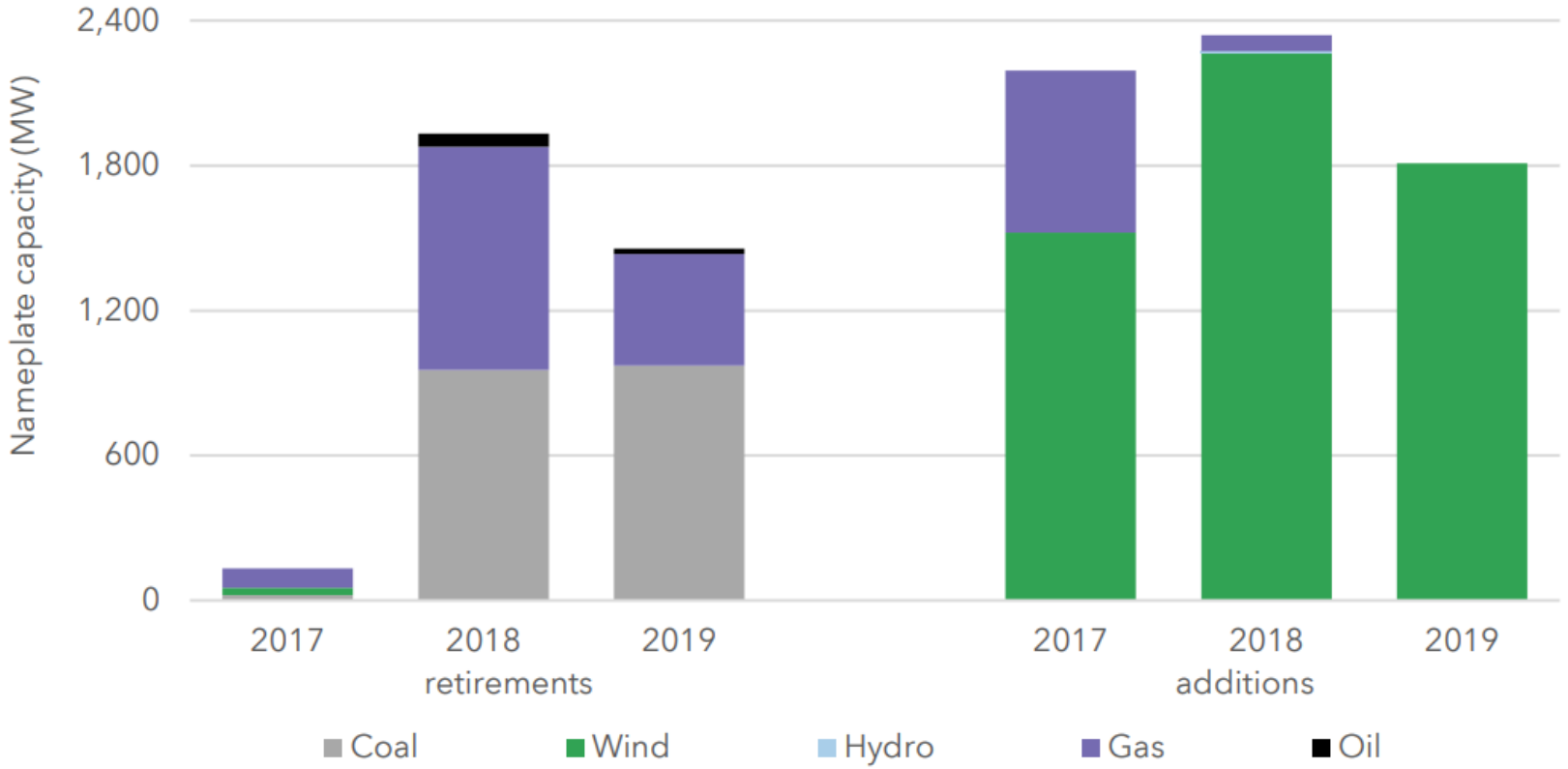
Capacity Contract	Power Purchase Agreement (PPA)	On-System Generation
• Only set's aside **capacity** for IPL to meet SPP requirements • No actual electricity sent to Independence • Examples: Oneta	• Offers **energy** and **capacity** • Examples: Smoky Hills, Marshall, etc.	• Offers **energy, capacity, system reliability** • Examples: Combustion Turbines (CTs) at Substations H, I, J

Cost of buying capacity contracts and PPAs on the market will likely increase, making investment in on-system generation more viable

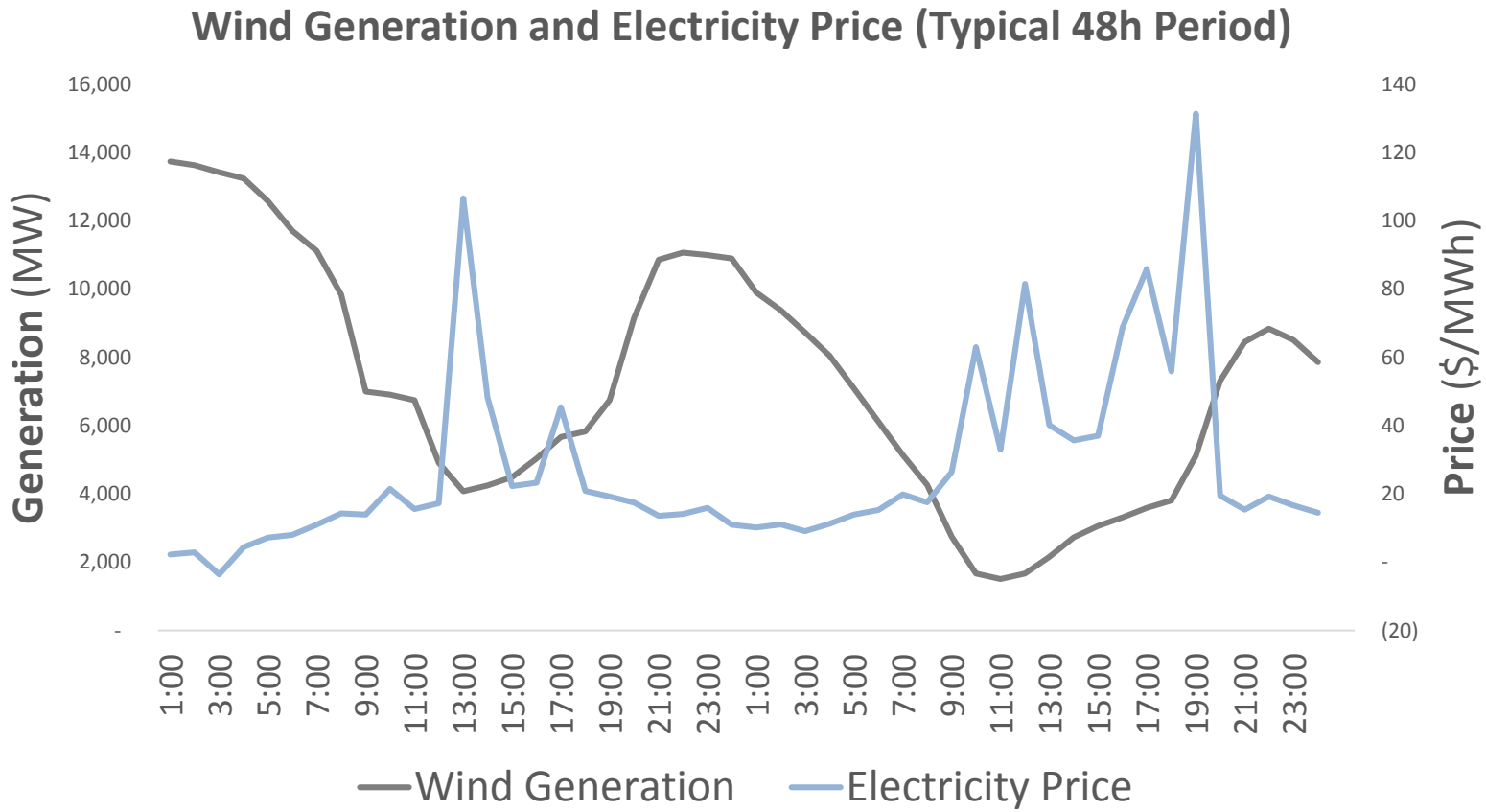


**Oneta Contract was purchased at industry lows

In the SPP Market, old coal and gas capacity is being replaced by new wind and gas



Increased wind turbine capacity contributes to volatility and price spikes when the wind drops off



Growth of renewable-based capacity and volatility creates an opening for on system peaking units

- Renewable resources (mostly wind turbines) account for growing share of SPP capacity
  - Renewables only run when the wind is blowing and sun is shining
- **SPP relies on other resources that can fill the gap left by renewables**
- Baseload units (traditional coal plants) have trouble competing with renewables on a cost basis and **can't turn on/off quickly enough to meet demand when the price is right**
- Peaking units (natural gas turbines) ramp up quickly to provide electricity for short periods of time when electricity demand and price are high
- Peaking units can fill gaps left by renewables, **quickly and cost competitively**

Independence needs to be decisive

- Existing on system units (fuel oil/gas combustion turbines) have a remaining useful life at limited cost of 3-8 years and generate revenue for utility by selling electricity to the market

- Steps of Implementing New On-System Generation:
  - ❑ Environmental Permitting (18-24 months or longer)
  - ❑ Interconnection approval from SPP (18-24 months)
    - ❑ SPP Generation Interconnection Study – 4-5 years if start of study delayed into Summer
    - ❑ SPP Generation Replacement Project– 6-12 months
  - ❑ Delivery and installation of plant (18-24 months or longer)

- **Without action now, we will likely face limited options with ever-increasing costs when the CT's must finally be retired**

IPL Staff Recommendations

- #1) **Procure new on-system generation** using fast response, peaking unit technologies to support the requirements for Energy, Capacity and System Reliability and invest in the future of Independence

- #2) **Initiate the project as soon as possible** in 2020 to support the anticipated retirement of existing combustion turbines

- Milestones involving Council action:

- ❑ Evaluation and award of Request for Proposals
- ❑ Funding approval for SPP Interconnection study
- ❑ Selection of a separate Construction Contractor (EPC) as appropriate
- ❑ Selection and approval of Funding method

Questions ?