



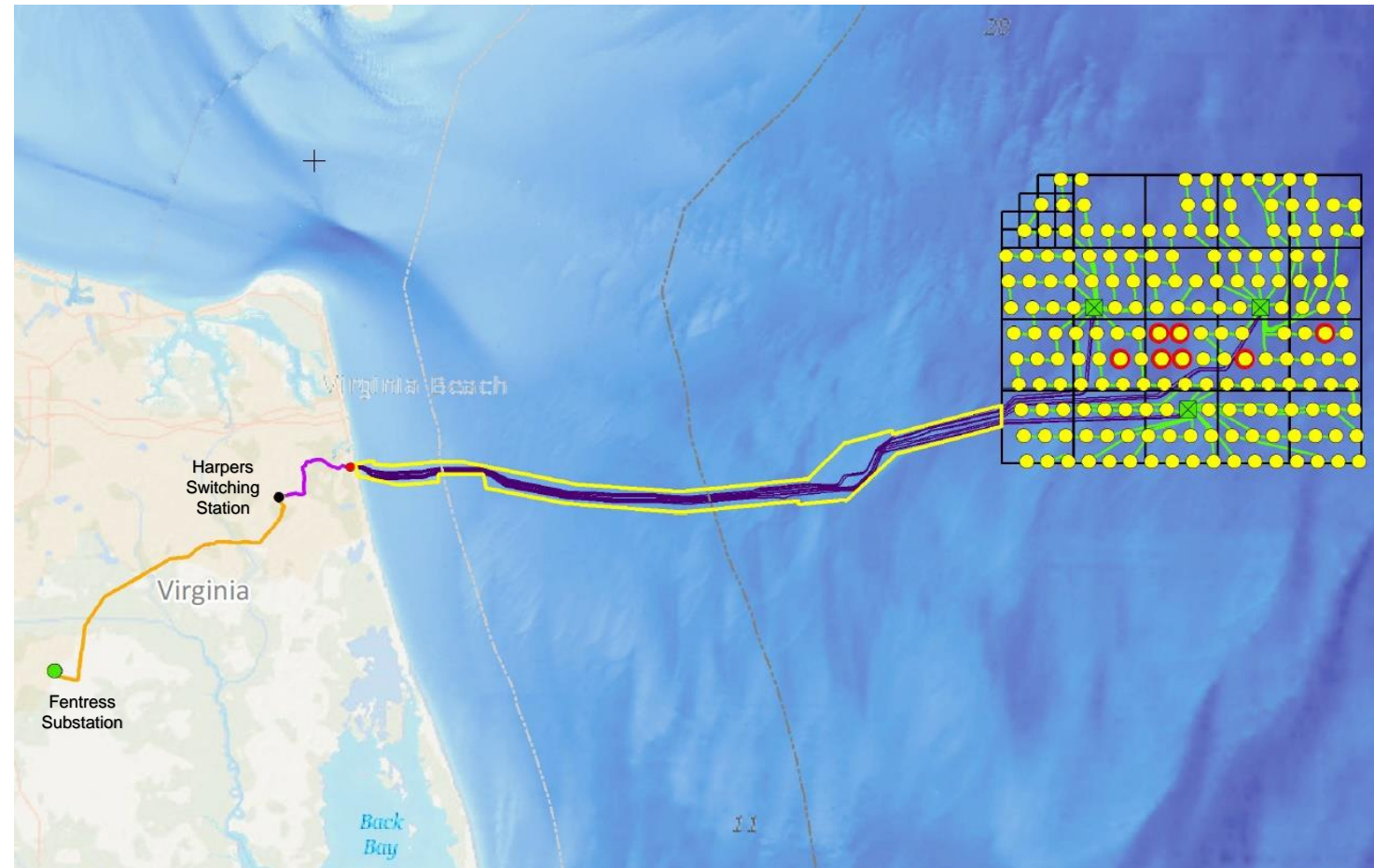
Coastal Virginia  
**Offshore Wind**

# Coastal Virginia Offshore Wind Update

**October 2023**

# Largest East Coast Utility Project Under Development

- Builds on success of the two-test turbine pilot project
- Located just east of the pilot project
- 27 to 42 miles offshore in a lease area equal to 85,000 football fields
- 176 X 14.7 MW turbines
- 2.6 GW total capacity
- Power up to 660,000 homes



# Many Accomplishments, More Objectives Ahead



✓ Nov. 2013	113,000-acre leasehold acquired via auction
✓ Sep. 2019	2.6GW full-scale deployment announced
✓ Dec. 2020	Construction & Operation Plan submitted to BOEM for 2.6GW
✓ May 2021	Foreign currency hedge strategy executed
✓ July 2021	Notice of Intent issued (BOEM)
✓ Nov 2021	Virginia OSW rider application submitted
✓ Dec 2021	Major contracts executed with SGRE, DEME, Bladt, Semco, EEW
✓ Aug./Dec. 2022	Regulated cost-of-service rider approved by VA SCC
✓ Dec. 2022	Draft Environmental Impact Statement issued (BOEM)
Oct. 2023	Record of Decision issued (BOEM)
2023/2024	Commence onshore/offshore construction
End of 2026	Construction completion

# Constructing CVOW With Experienced Partners

Wind Turbine Generators

Monopiles

Transition Pieces

Offshore Substations

Transport & install

**SIEMENS Gamesa**  
RENEWABLE ENERGY

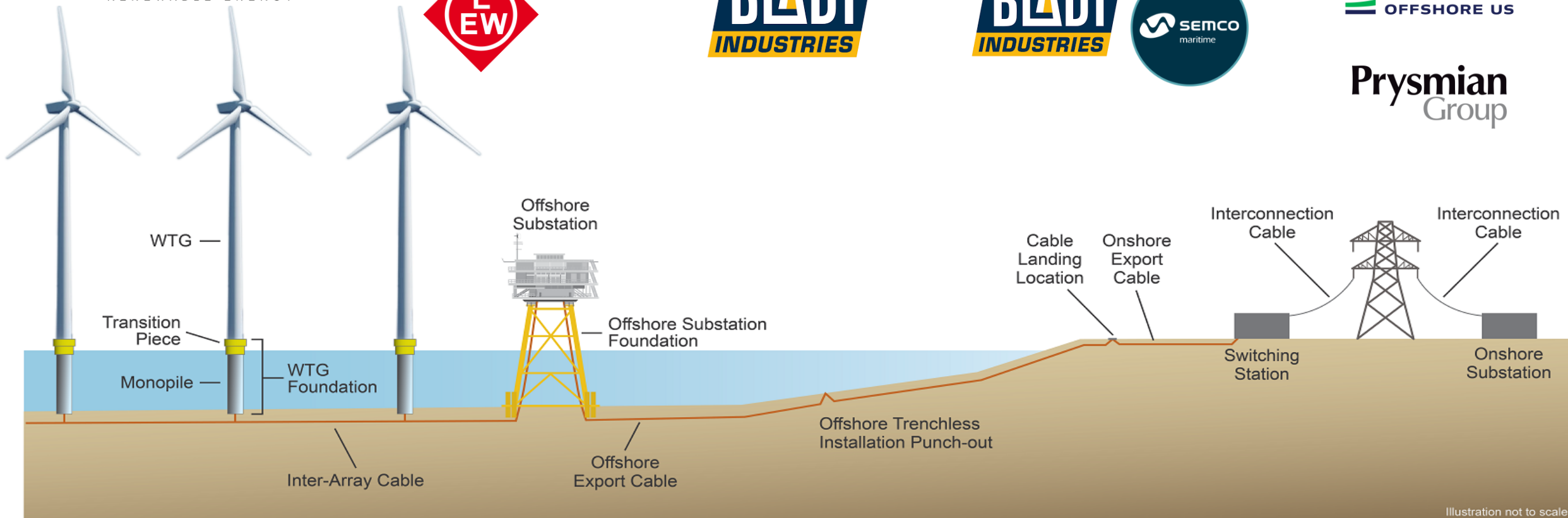
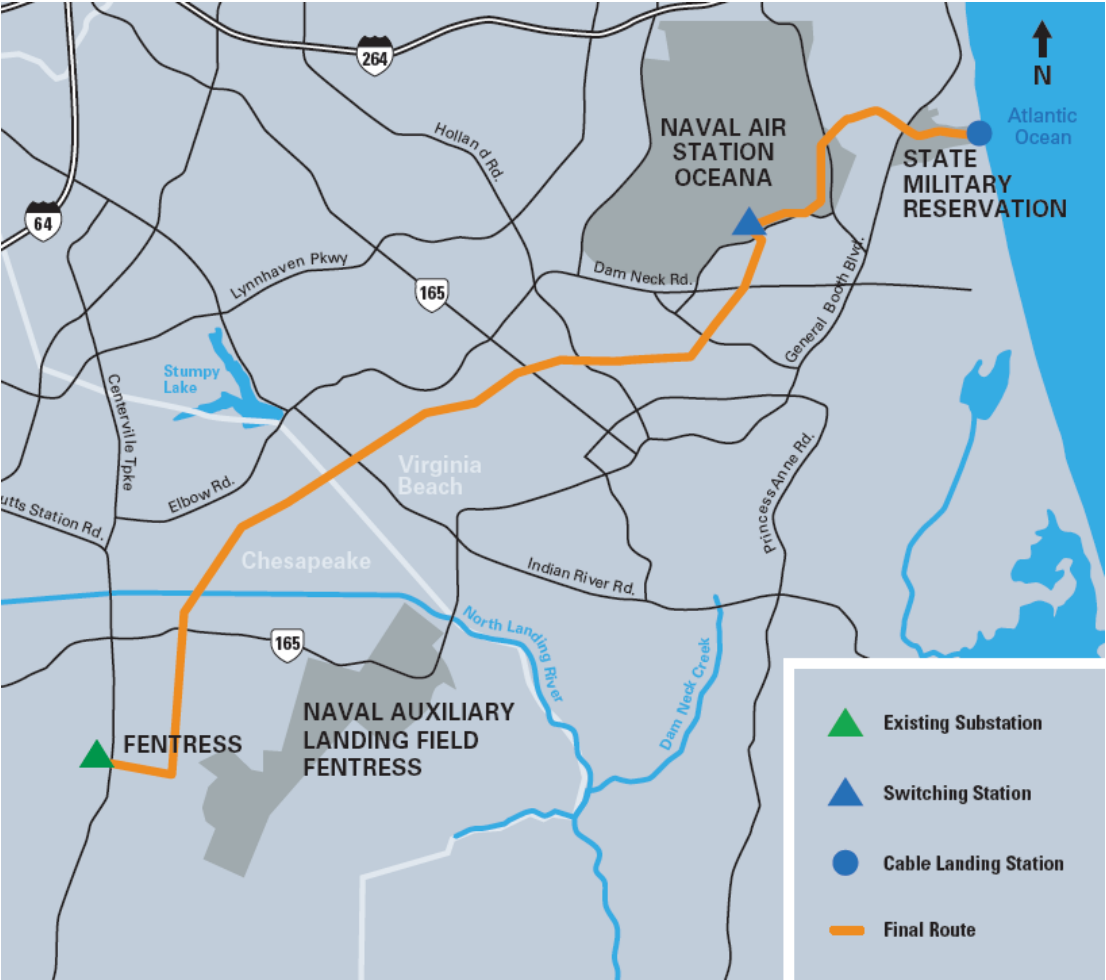


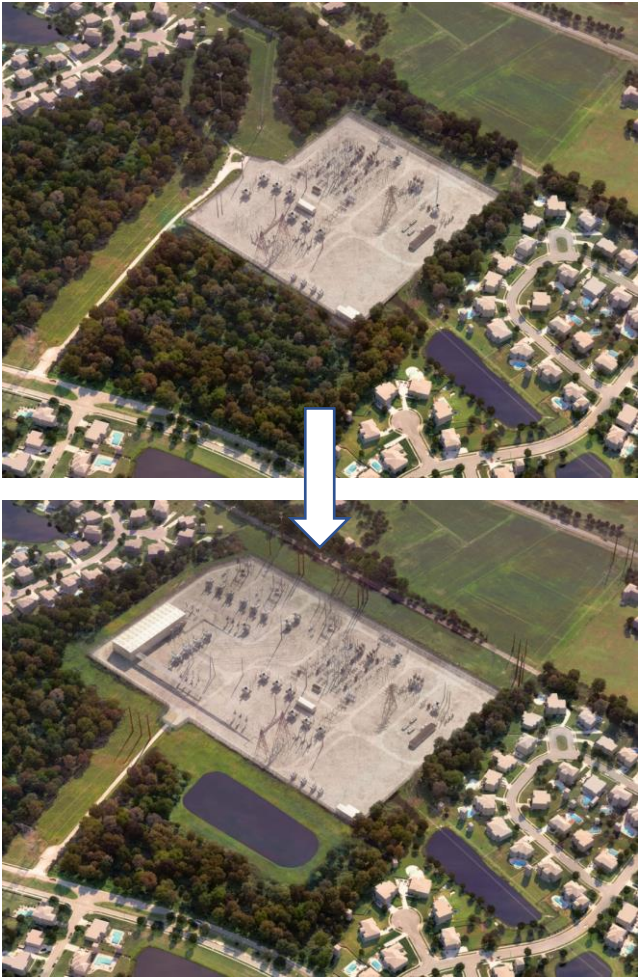
Illustration not to scale

# Delivering CVOW's Clean Energy to Our Customers

## Proposed Transmission Route



## Fentress Substation



## Harper Switching Station

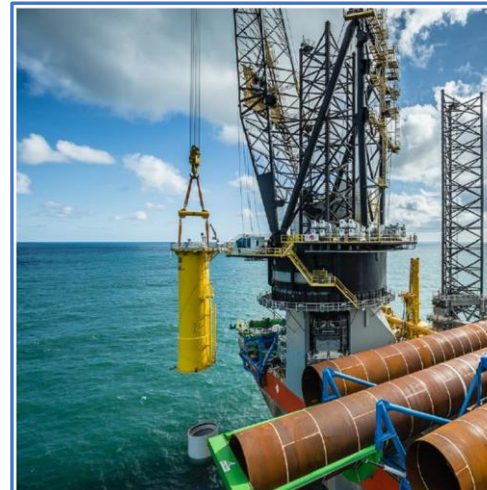


# Large Turbines = Large Components

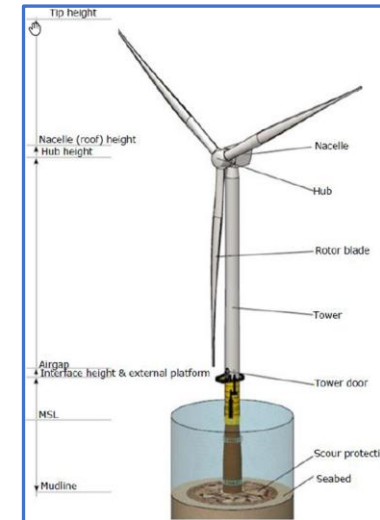


EEW SPC, Monopile load-out for Taiwanese Formosa 1 project in Rostock (GER)

- Length 270 ft
- Diameter 25 ft
- Weight 1900 tons



TP lift at Sandbank OWF (GER)



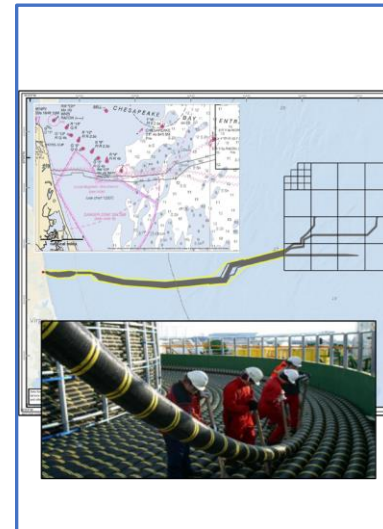
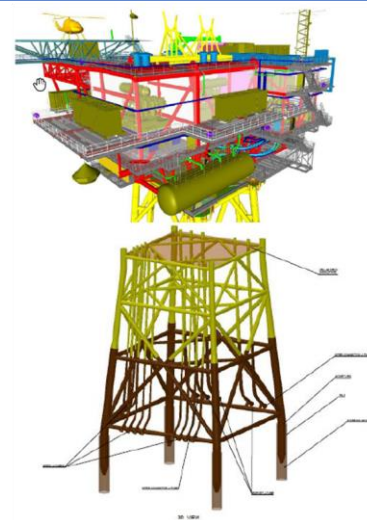
- 14.7 MW with power boost
- 836 ft turbine tip height from MSL
- 728 ft rotor diameter
- 472 ft hub height from MSL
- 358 ft blade length
- 60 ton blade weight
- 108 ft air gap
- 6.7 mph cut in wind speed
- 62.6 mph cut out wind speed

## Topside

- Length: 178 ft
- Width: 98 ft
- Height: 80 ft
- Target weight: 4,000 tons

## Jacket

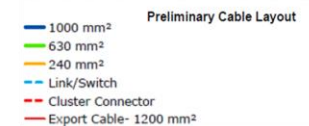
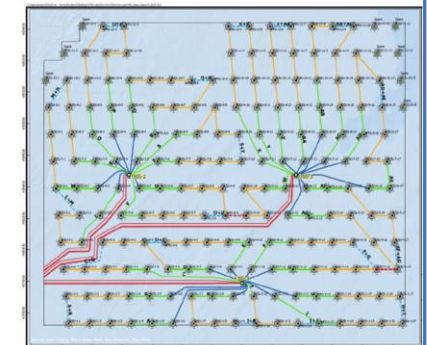
- Seabed level footprint: 98 X 98 ft
- Topside footprint: 85 X 85 ft
- Height: 174 ft
- Weight (without piles): ~3,300 tons
- Weight (with piles): ~4,400 tons
- 4-legged jacket with 4 piles



- Inter Array Cable
  - 66kV
  - 274 miles of cable
  - 7.1" diameter cable

- Offshore Export Cable
  - Nine 230 kV export cables
  - 417 miles of cable
  - 11.2" diameter cable
  - 3 to 16 ft burial depth

- Offshore Sub-Station
  - 3 x 880 MW substations
  - 66-kV-230-kV step up



# The Vision: An Offshore Wind Industry Cluster



# Expanding Beyond Our Prime Contractors



**CVOW Role:** *Charybdis* operation support



**CVOW Role:** Marshaling and Staging Port Services



Midland Communications Inc.

**CVOW Role:** CVOW Communications



**CVOW Role:** Civil Engineering



**CVOW Role:** Owner's Engineer



**CVOW Role:** PMT upgrade contractor for Port of Virginia



**CVOW Role:** Lamberts Point developer



**CVOW Role:** Subsea cable health monitoring



**CVOW Role:** Environmental permitting



**CVOW Role:** Crew Transfer Vessel Support



**CVOW Role:** Fairwinds - MCC General Contractor



**CVOW Role:** Ops Base design and construction oversight



<b>\$155 Million US Spend</b>	<b>939 Current US Staffing Level</b>
<b>\$136 Million VA Spend</b>	<b>760 Current VA Staffing Level</b>
<b>527 Current Local Staffing Level</b>	

## Port of Virginia Upgrades

- Approximately 100 subcontractors/vendors/suppliers for a total of \$109,849,078 dollars committed/spent.
- \$60,648,531 which is about 55% of the dollars have gone local Hampton Road Businesses.
- \$91,831,255 which is about 83% of the dollars have gone to Virginia based businesses.
- \$18,563,850 which is about 17% of the dollars have gone to Out of State businesses.
- 68% diverse workers and 73% Virginia workers

# Questions, Discussion and Shared Insights

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# A Virginia Based Offshore Wind Fleet



## Endeavor, Dominion Energy's Crew Transfer Vessel

- 2 Crew Transfer Vessel
- Operating Crew (total): 8
- Resource shuttles



## "Walk to Work" concept for Service Operations Vessels

- 1 Service Operations Vessel
- Operating Crew: 25
- 2-week deployments



## "Charybdis" 1<sup>st</sup> Jones Act compliant offshore wind turbine installation vessel

- Constructed by Dominion Energy Inc.
- Supporting U.S wind industry
- Operating Crew: 70

# Developing Virginia's Clean Energy Workforce





- 2.6 GW capacity; regulated utility offshore wind generation resource
- Est. installed cost of **~\$10B** (including onshore transmission) (no change)
- Est. lifetime capacity factor 43.3% (gross) / 42.0% (net) (no change)
- Est. LCOE of **~\$80 – \$90/MWh** (no change)

<sup>1</sup> Fixed costs as percentage of total project costs, excluding contingency