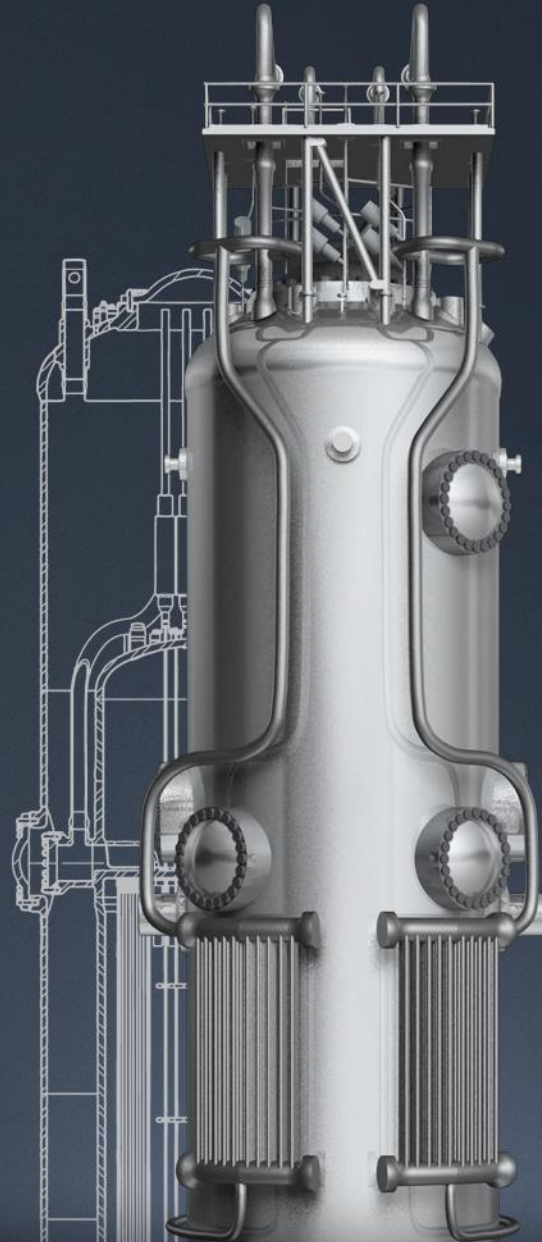




North Carolina General Assembly's Joint  
Legislative Commission on Energy Policy  
April 3, 2018

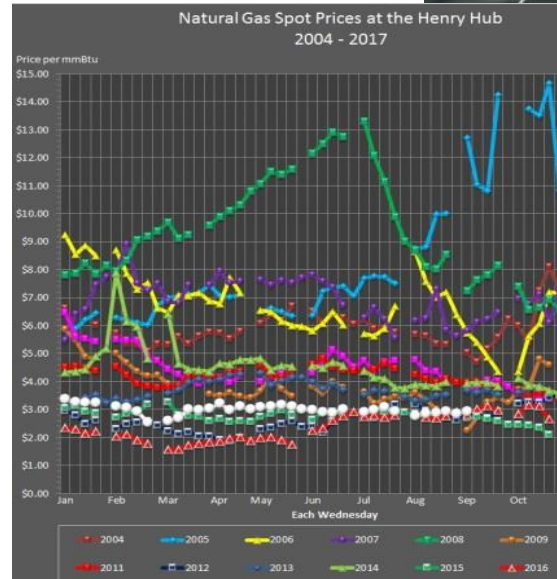
## The Future of Nuclear Power

Nils Breckenridge  
Regional Sales Manager  
NuScale Power



# Challenges

- Project Schedule
- Low cost nat. gas
- Distributed generation
- Renewables
- Flat Demand
- Waste
- RPS

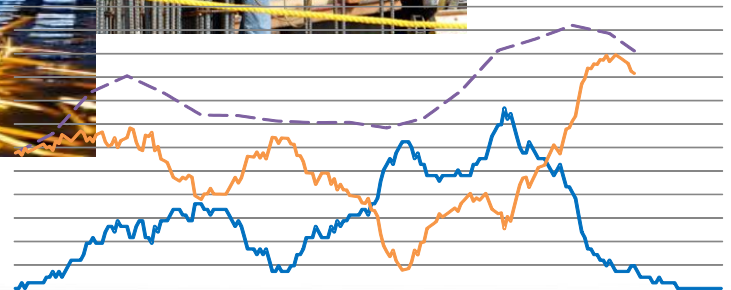
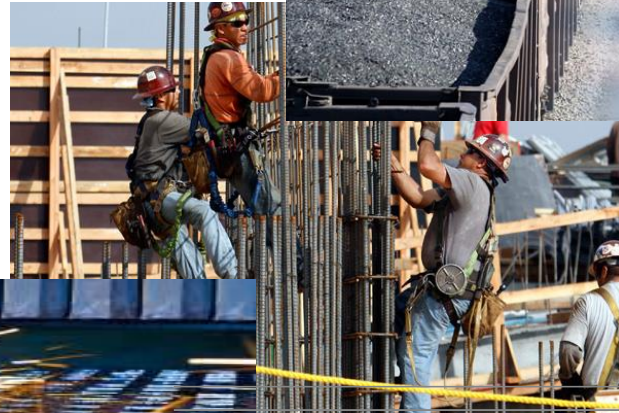


***Part of Diverse Clean Energy Platform?!***



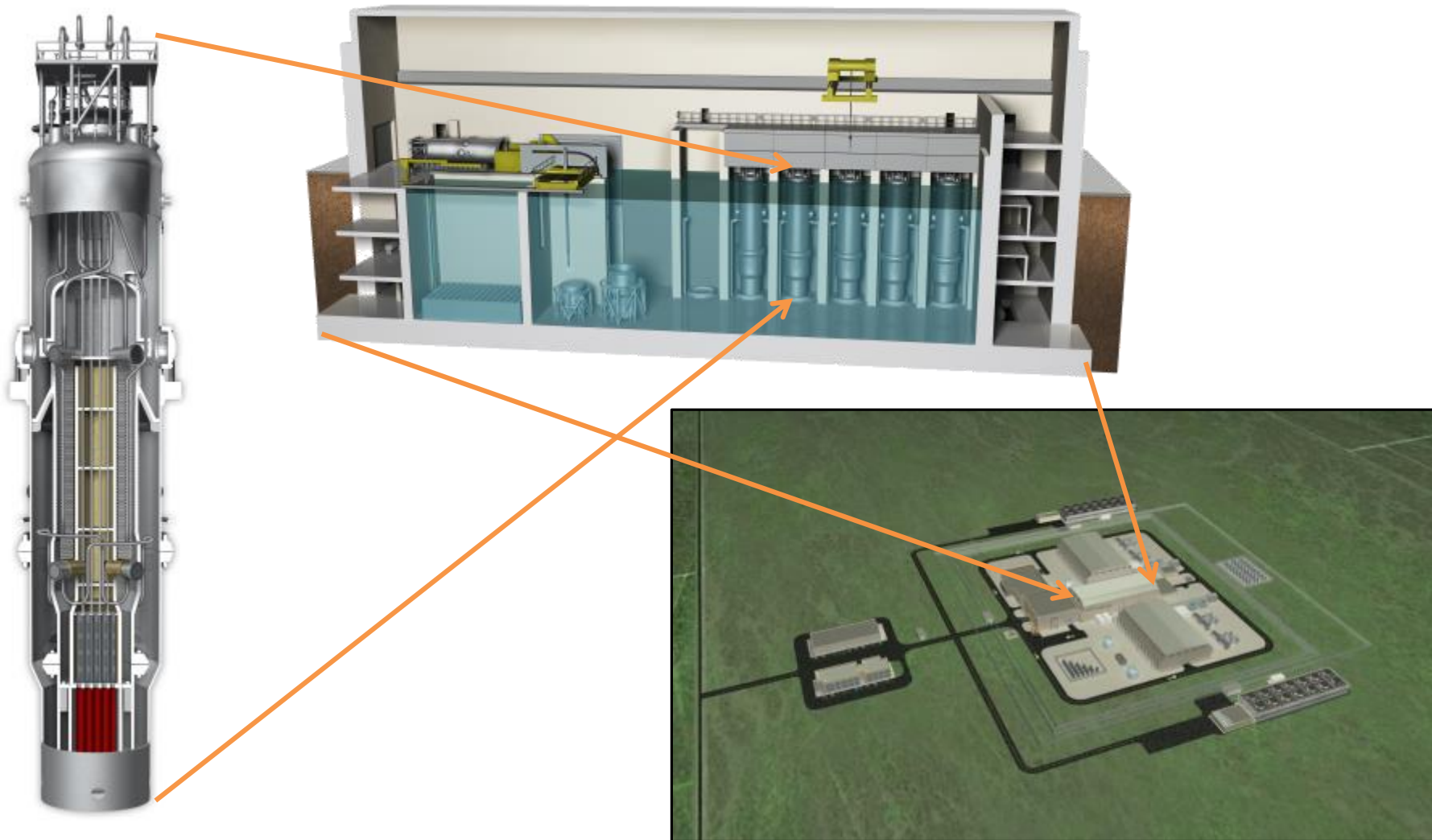
# Opportunities

- US technology leadership
- Energy Security
- Economic development
- Diverse Applications
- Reliability / Resiliency
- Aging coal
- Jobs



***National Imperative***

# NuScale Power Plant



# Beyond Baseload NuScale Diverse Energy Platform

Mission Critical Facilities



Hydrogen Production



- **Reliable Power** – Protecting Critical Infrastructure through Microgrid
- **Clean Transportation Fuel** – Hydrogen Production



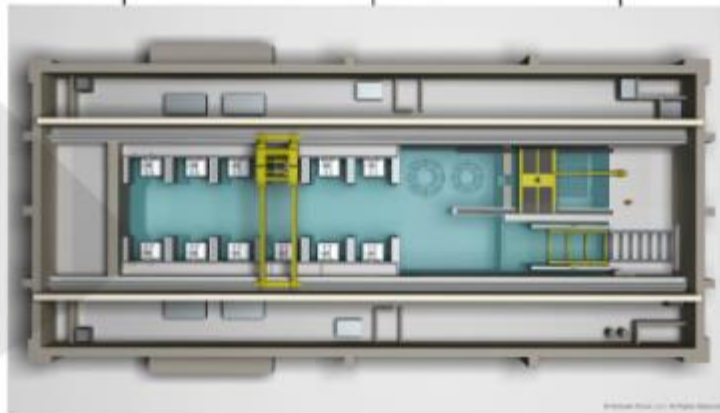
Desalination



Wind Integration



Oil Refineries



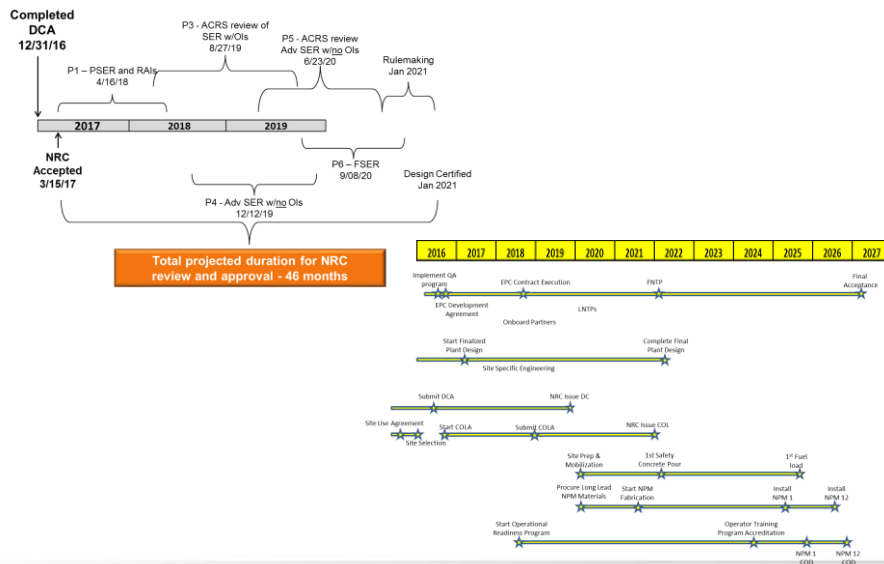
- **Clean Water** – Desalination
- **Clean Energy** - Facilitating Growth of Renewables – Load Following
- **Clean Air** - Reduction of Carbon Emissions at Oil Refineries



# U.S. Licensing Status

## Vendor Licensing (NuScale)

- Design Certification Application (DCA)
  - First SMR DCA submitted in U.S. – December 2016
  - NRC on or ahead of schedule
  - Final Safety Evaluation Report 3Q2020



## Plant Owner Licensing

- Combined Operating License Application (COLA)
  - Site selected in Idaho, UAMPS to develop and submit (COLA), as project owner of carbon free power project (CFPP)
  - First module operation 1Q2027

# Construction Cost Summary

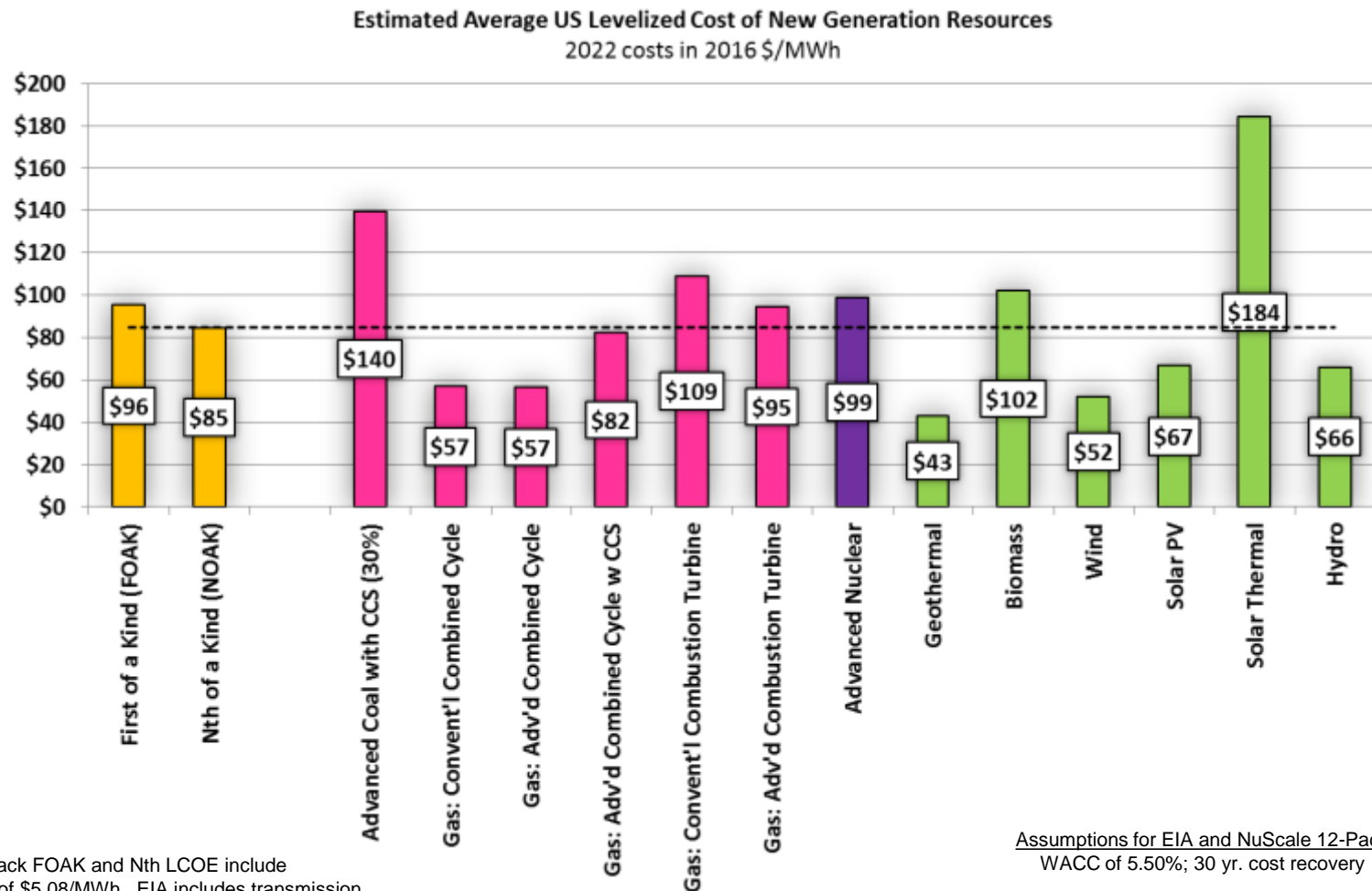
## Overall EPC Overnight Plant Costs (\$1,000,000)

ITEM	2014 Dollars
Power Modules (FOAK Cost plus Fee, Transportation, & Site Assembly)	\$ 848
Home Office Engineering and Support	\$ 144
Site Infrastructure	\$ 60
Nuclear Island (RXB, RWB, MCR)	\$ 538
Turbine Island (2 buildings with 6 turbines each)	\$ 350
Balance of Plant (annex, cooling towers, etc)	\$ 225
Distributables (Temp. Bldgs., Field Staff, Const. Equip., etc.)	\$ 545
Other Costs	\$ 185
<b>Total Overnight Price</b>	<b>\$ 2,895</b>

***\$ 5,078 per KWe net***

Note: Delivered costs shown are in 2014 \$'s.

# NuScale LCOE in North America



NuScale 12-Pack FOAK and Nth LCOE include Owner's Cost of \$5.08/MWh. EIA includes transmission investment from \$1.10/MWh (Advanced Nuclear) to \$6.10/MWh (Solar Thermal). NuScale included \$1.10/MWh for transmission investment in FOAK and Nth LCOE values.

Source: U.S. Energy Information Administration, Levelized Cost and Levelized Avoided Cost of New Generation Resources in the Annual Energy Outlook 2017, April 2017, except NuScale (12-Pack); NuScale Model



# Idaho Department of Labor

- Construction of a NuScale SMR at Idaho Falls, ID

## NuScale Power Plant Construction

Impact Type	Employment	Labor Income	Industry Sales
Direct Effect	1,000	\$1,143,677,418	\$2,800,000,000
Indirect Effect	3,987	\$123,494,919	\$353,692,045
Induced Effect	7,821	\$243,927,035	\$620,061,282
Total Effect	12,808	\$1,511,099,372	\$3,773,753,328

- Operational Impact

## NuScale Power Plant Operation

Impact Type	Employment	Labor Income	Industry Sales
Direct Effect	360	\$58,485,594	\$287,825,795
Indirect Effect	146	\$4,712,635	\$13,136,2375
Induced Effect	1,001	\$35,234,431	\$88,195,580
Total Effect	1,507	\$98,432,660	\$389,157,612

# What is Needed – Policy Considerations

- Federal government prioritizes energy infrastructure
  - Production tax credits
  - Loan Guarantee
  - Private Public Partnerships
  - Waste policy
  - Power Purchase Agreements
- State governments
  - Team with universities and industry on economic development studies
  - Incentives for real economic growth
  - Construction Work in Progress
  - Clean energy standards
  - Zero Emissions Credits (NY,IL)
  - Identify nuclear power



# Offices

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<http://www.nuscalepower.com>

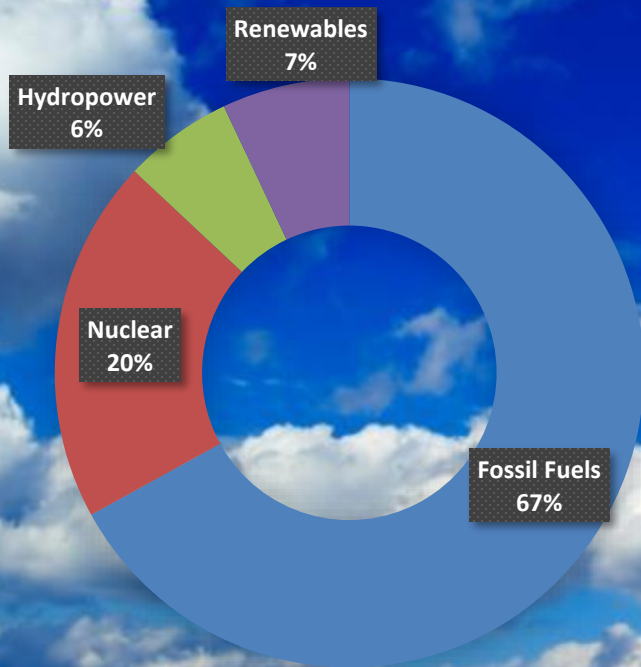
 [Twitter: @NuScale\\_Power](https://twitter.com/NuScale_Power)





# Clean Air

## Electricity Generation by Energy Source



## Percentage of Carbon-free Electricity

