

# KY Nuclear Energy Development Workgroup

KY ENERGY AND ENVIRONMENT CABINET

---

JULY 25, 2023



# Etiquette Reminders

---

This meeting is considered a public meeting and has been advertised as such.

The meeting will be recorded but will be posted online. Recording will be available for those who registered or were not able to attend. Meeting transcripts will be used for the final report due December 1, 2023. Meeting materials and notes will be posted on a workgroup webpage.

Please stay muted if you are online and raise your hand to speak or comment.

Please be mindful of the time we have together and speak to move the conversation forward.

Please be respectful of other perspectives and speak with kindness and patience.

We are assembled to complete the specific tasks outlined for the workgroup.

# Agenda (10am-12pm ET)

---

10:00 AM-10:15 AM: Welcome Remarks and Introductions

10:15-11:15 a.m.: Review and Discussion of Workgroup Member Interviews and an Introduction to Next Steps; Consensus Statement and Discussion; Potential Solutions and Discussion

11:15-11:45 a.m.: Presentations on permanent State Nuclear Workgroups (Virginia and Idaho invited)

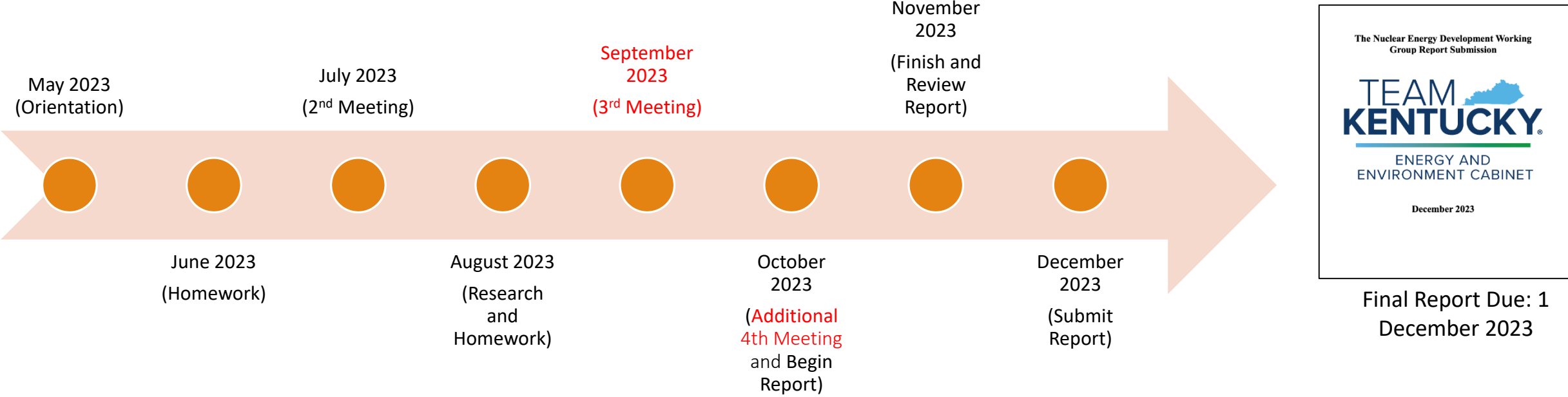
11:45 a.m.-12:00 p.m.: Homework and next steps

# Workgroup Tasks

---

- 1) Identify the current barriers to the deployment of nuclear power generation resources and other related technologies in the Commonwealth
  
- 2) Develop recommendations for how a permanent nuclear energy organization could address the barriers to the deployment of nuclear power generation resources and other related technologies in the Commonwealth.
  
- 3) The Nuclear Energy Development Working Group shall submit a report to the Governor and to the Legislative Research Commission on or before **December 1, 2023**,
  - detailing all working group activity since its establishment and
  - providing recommendations for the creation of a permanent nuclear energy commission in state government,

# Proposed Workgroup Schedule



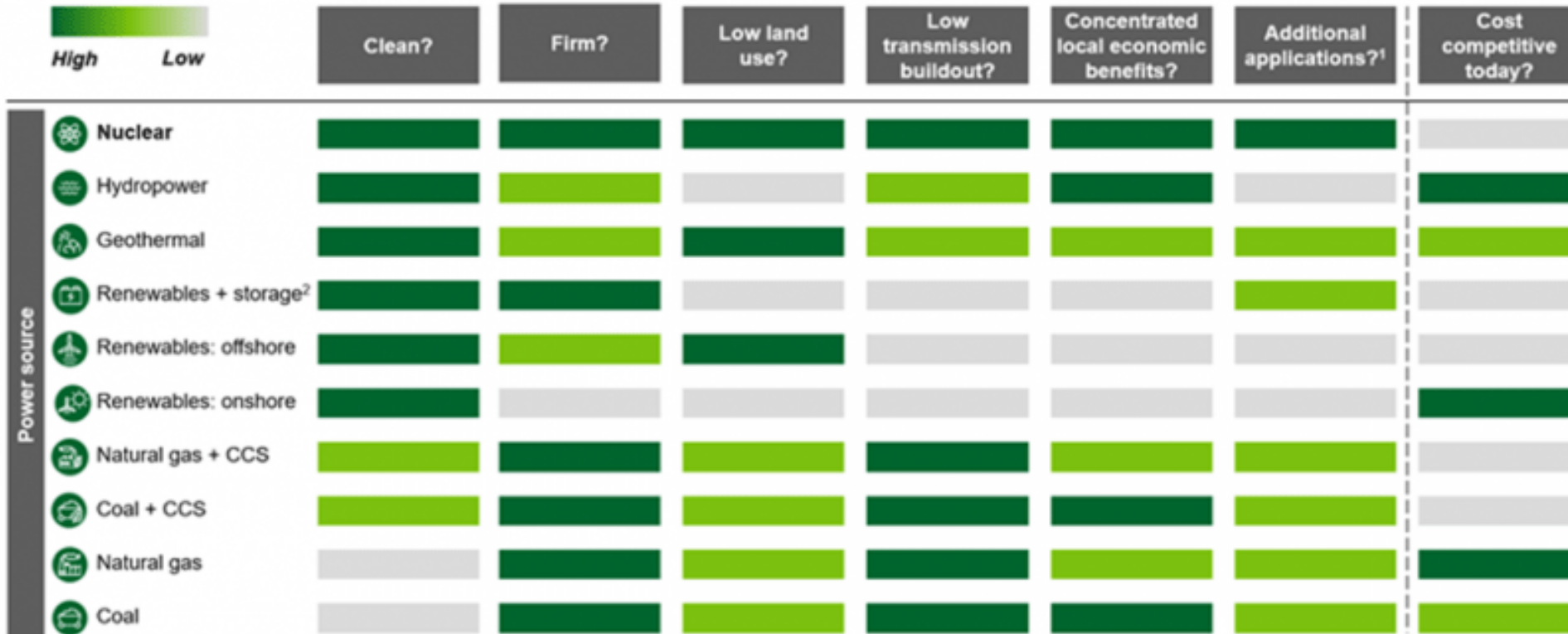
# Refresher

---

COMMERCIAL LIFTOFF



# Nuclear Power is a Key Asset



1. Additional applications include clean hydrogen generation, industrial process heat, desalination of water, district heating, off-grid power, and craft propulsion and power  
 2. Renewables + storage includes renewables coupled with long duration energy storage or renewables coupled with hydrogen storage

Source: DOE Liftoff Report Advanced Nuclear Energy

# Advanced Nuclear Energy Provides Economic Benefits and High-Quality Jobs

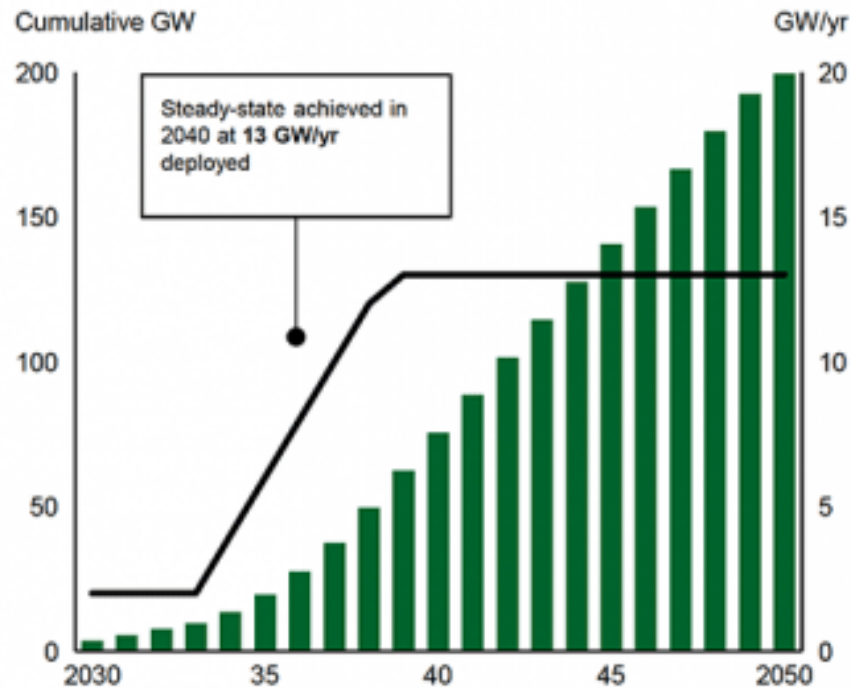
Generation type	Permanent jobs on site, jobs/GW	Industry wage median, \$/hr	Benefits concentrated in local community?
Nuclear	237 <span style="border: 1px dashed black; padding: 2px;">~500</span>	41	✓
Coal		34	✓
Natural gas		34	✓
Wind	80	26	✗
Solar		24	✗
Oil generation	Variable	24	✓
Other renewable generation	Variable	18	✗

Source: DOE Liftoff Report Advanced Nuclear Energy



# Building an order book is necessary to meet adequate buildout of nuclear

**New nuclear deployment starting in 2030**  
Annual deployment (GW/yr) built and Cumulative GW online



**New nuclear deployment starting in 2035**  
Annual deployment (GW/yr) built and Cumulative GW online

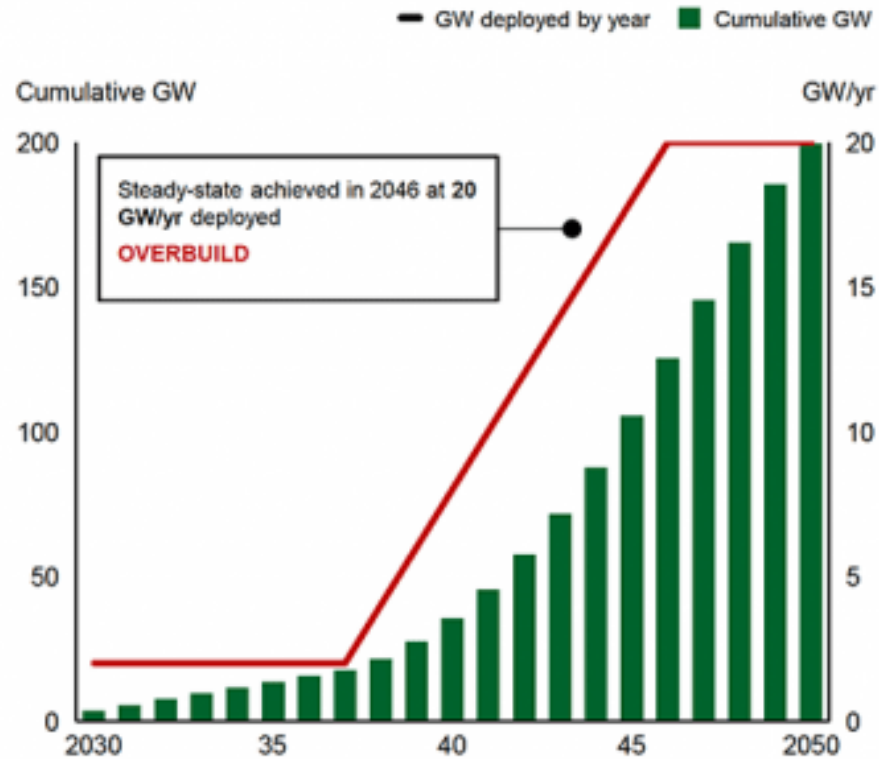
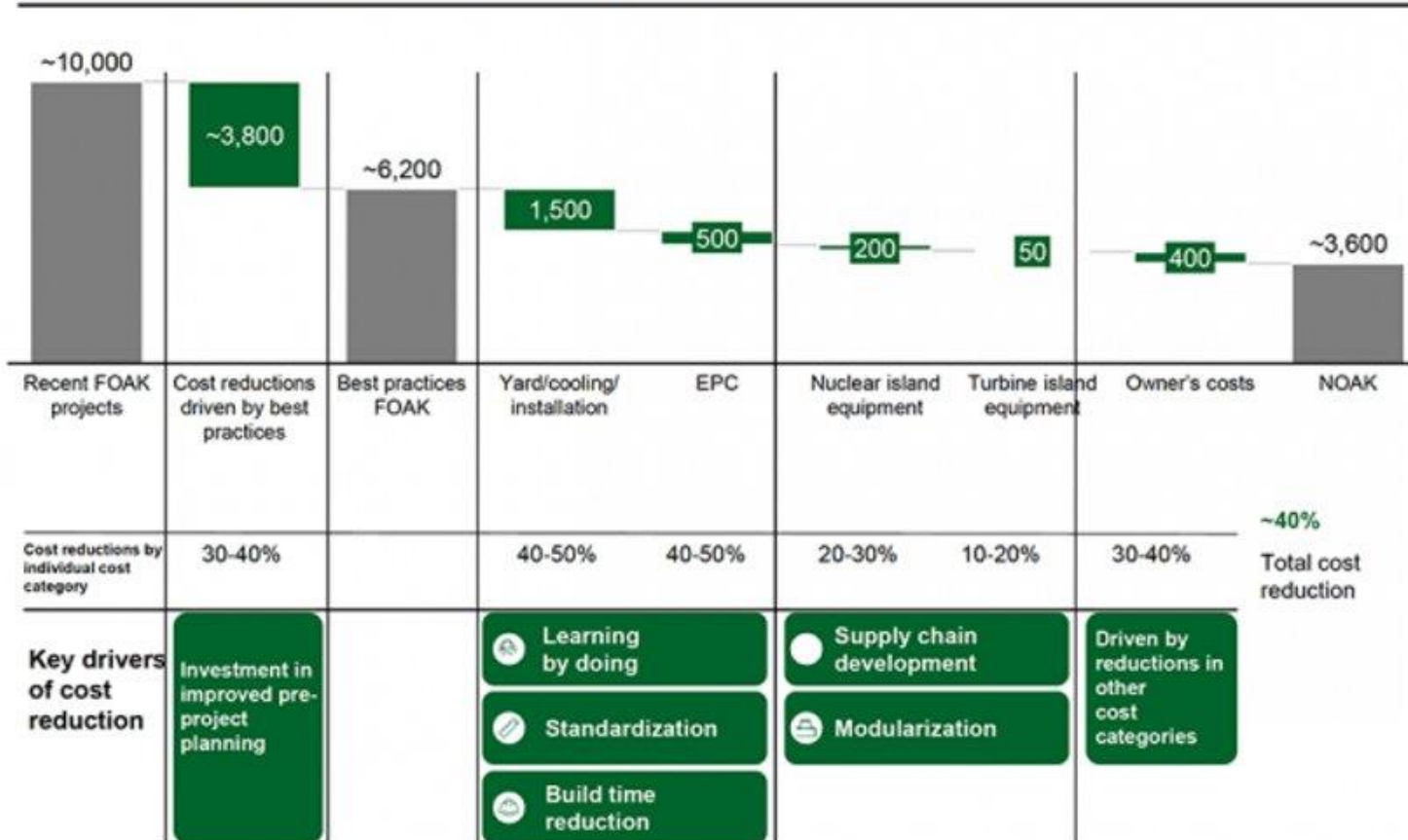


Figure 1: New nuclear build-out scenarios and implications for industrial base capacity requirements

Source: DOE Liffort Report Advanced Nuclear Energy

# New Projects Will Be Different from Recent Over-Budget Builds

Potential advanced nuclear FOAK to NOAK overnight capital costs, \$/kW



# The Path to Commercial Scale Deployment

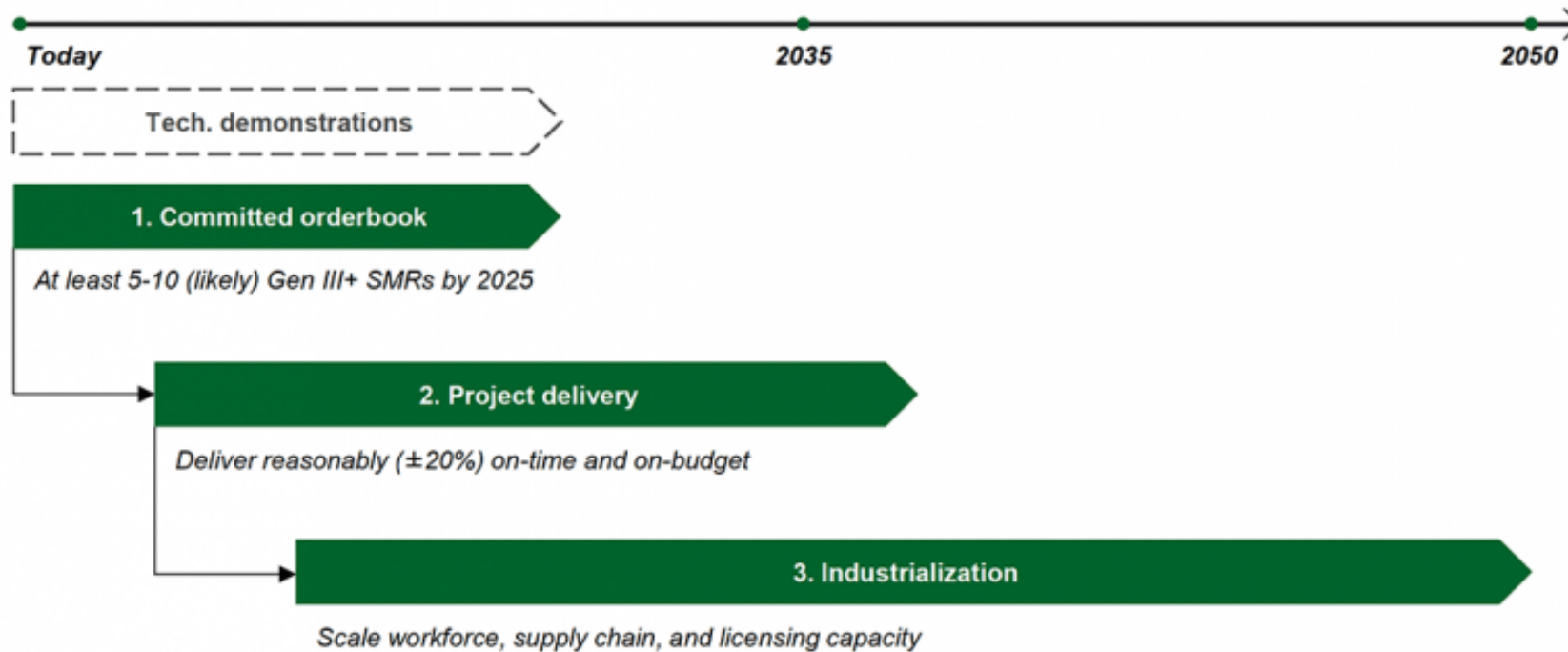


Figure 2: Path to the scale-up of the advanced nuclear industry to meet 2050 decarbonization targets

(10:15am-  
11:15am)

# Summary of Interviews and Introduction to How to Move Forward

# Summary of Barrier Categories Discussed

---

## Identified Barrier Categories

- regulatory,
- statutory,
- financial,
- social,
- environmental,
- workforce, and
- educational

# One-on-one interviews confirmed our understanding of the barriers. How do we move forward to address these barriers?

## Regulatory

- Licensing and Permitting
- Regulatory Approvals
- Local Ordinances

## Statutory

- SB4

## Financial

- Construction Timelines
- Financing Mechanism
- Site Identification
- Academic Funding

## Social

- Perception of Safety
- Cultural Acceptance
- Perception of Energy Security
- Educational & Workforce Development

## Environmental

- LLW
- HLW
- Seismic Conditions
- Water Consumption
- Historic Waste Management

## Workforce

- Electricians
- Construction Nuclear Technologist
- Coal Workforce Retraining
- Military Retraining

## Education

- No existing nuclear engineering programs

# External Factors Affecting Nuclear Development

---

Natural gas and renewable market behaviors

Geopolitical events

Federal incentives and regulatory approvals

Carbon and environmental policies and regulations

Corporate sustainability goals

Policies of Regional Transmission Organizations

Natural and human induced hazards and severe weather events

# Framing Questions:

---

- 1. What should be the primary objective for adding nuclear to our energy mix?***
- 2. How can these challenges be presented as opportunities?***
- 3. What does success look like?***



# Potential Consensus Statement

---

Based on everything we heard:

*“Kentucky’s economic position globally and wellbeing of its citizens is dependent upon safe, reliable, and resilient power that provides price stability and cost competitiveness while protecting Kentucky’s environmental and natural resources. The decision of whether or not to pursue nuclear economic development in Kentucky is a complex one, with intentional and effective community engagement and community support a central threshold for development.*

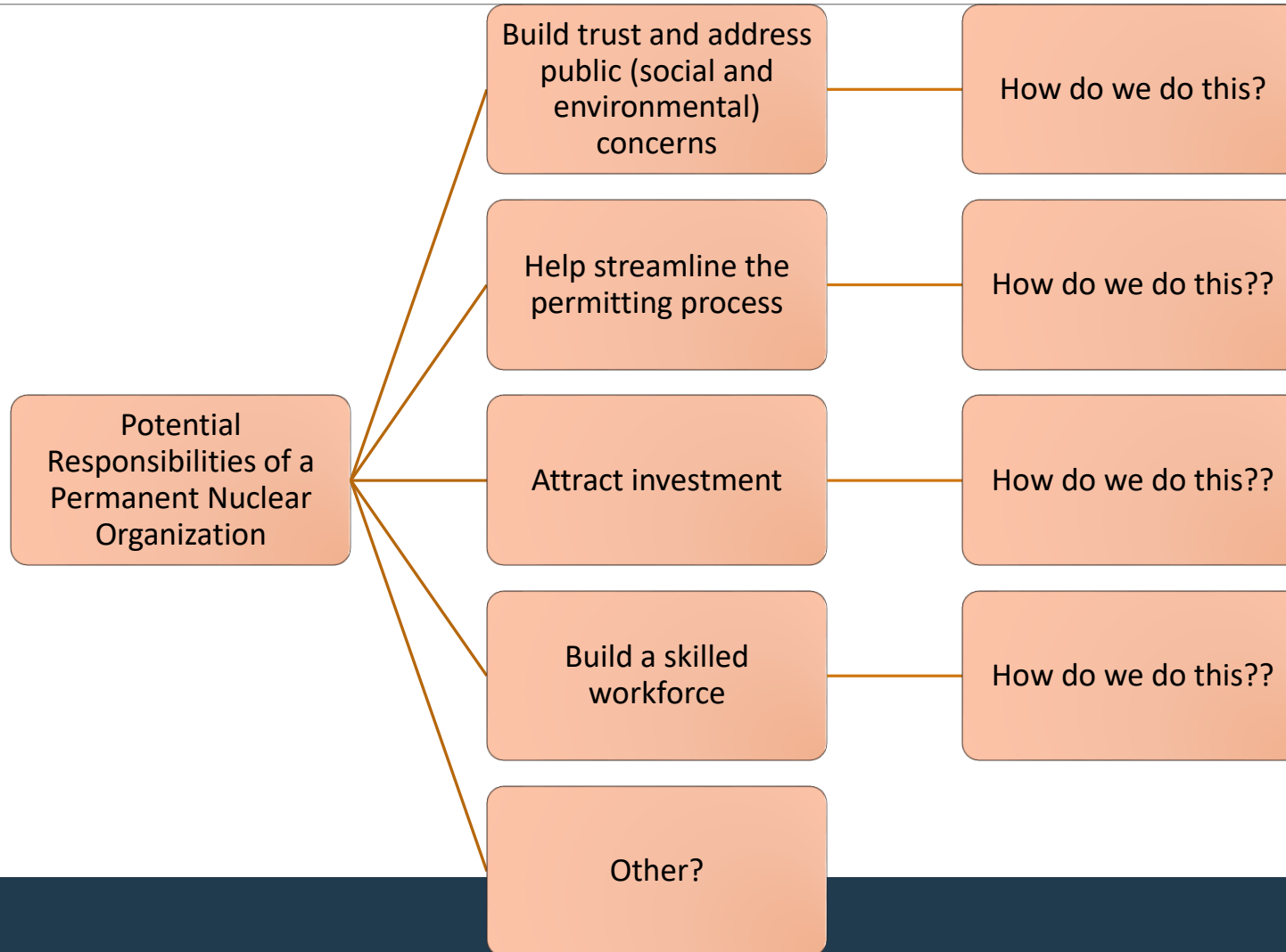
*There are a number of well-documented factors that the state will need to consider, including the cost, external influences, safety, regulatory processes, workforce, public perception and environmental impacts. However, if Kentucky is able to overcome the barriers to advanced nuclear economic development, identify and deploy solution sets, it could have a significant impact on the state's energy and economic future. “*

# What Does Success Look Like in KY?

---

- An independent organization that advocates and leads nuclear economic development in Kentucky.
- A public that is protected, well informed and participates in an inclusive decision-making process.
- A supportive legislative environment.
- A regulatory process that appropriately allocates the costs, risks and benefits between the utility, developers, industrial partner, consumer, and state and federal governments.
- Electricity that is affordable.
- Kentucky increases its manufacturing and economically competitiveness.
- Kentucky's natural and environmental resources are protected and the energy infrastructure is reliable.
- High paying, skilled jobs across manufacturing, fuel supply, and generation.
- Workforce training and education programs that meet the needs of the industry.

# Potential Responsibilities of Permanent Nuclear Development Energy Organization

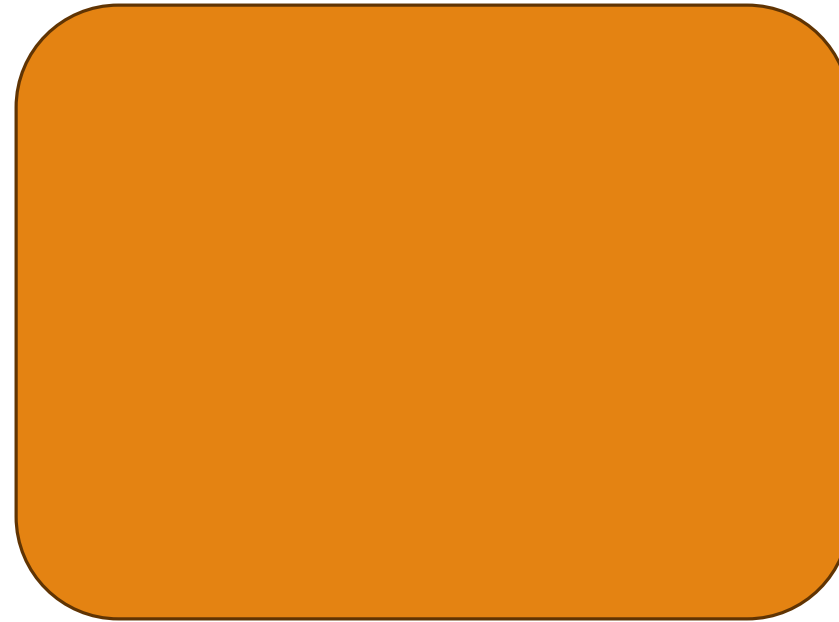


# Virtual Presentations from Idaho; Virginia

---



Idaho Line Commission: Mayor Casper



Virginia Nuclear Energy Consortium:  
April Wade

# Expectations moving forward

---

- **Reminder of schedule:**

- August: Research on existing workgroup and commission structures in other states. **Complete homework**
- September: 3rd Working Group meeting (half-day). Begin group discussion on Mission and Structure
- October: Hold for 4th Working Group meeting and begin report writing
- November: Finalize and submit report

- **Homework**

- Straw-man proposal which is a brainstormed simple draft proposal intended to generate discussion of its disadvantages and to spur the generation of new and better proposals.

- **3<sup>rd</sup> Working Group Meeting:**

- **September 6th** will be a longer session (~4 hours), please hold this date.
- Consider October as an additional meeting.

# Questions

---

KENYA.STUMP@KY.GOV

