

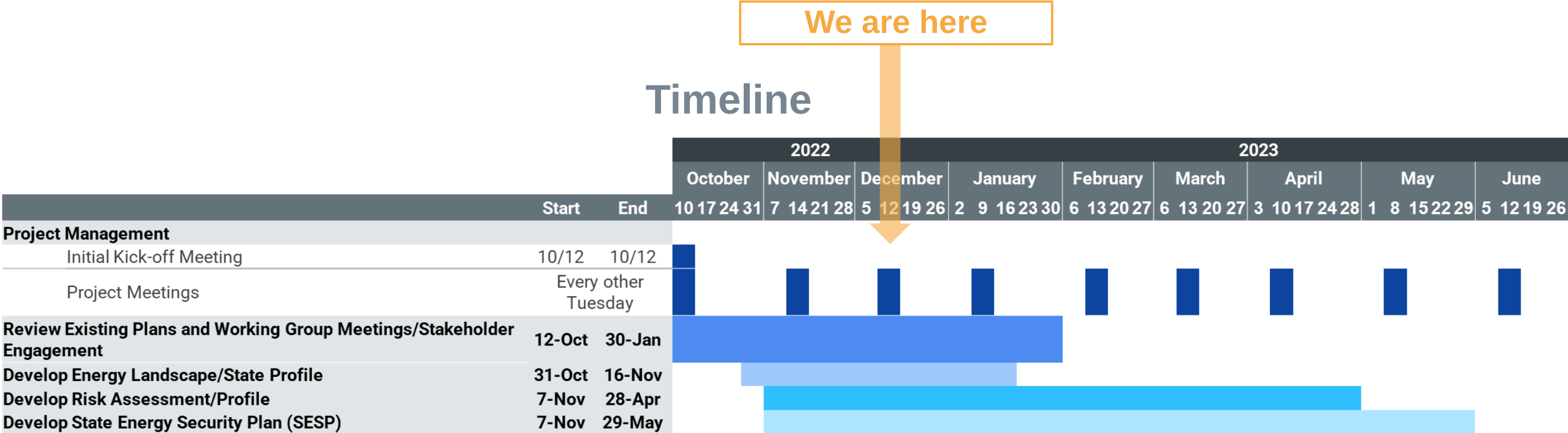
# Alaska State Energy Security Plan

## → Second Advisory Group Meeting

December 13, 2022



# State Energy Security Plan Progress



# State Energy Security Plan Progress

- **Energy Landscape and Risk Profiles**

- ★ Summary of Electricity, Liquid Fuel, and Natural Gas Energy Systems in the State
- ★ Threats to Energy Infrastructure
  - Risk Assessment

- **Energy Security and Emergency Response Authorities**

- ★ Key State Authorities and Statutes

- **Energy Security Planning and Preparedness**

- ★ State Energy Office Roles and Responsibilities
- ★ Other State Agency Roles and Responsibilities
- ★ Other Stakeholder Roles
  - Regional Coordination

- **Energy Emergency Response**

- Operational Playbook of State Response Actions During Power Outages/Electricity Events, Liquid Fuel Events, and Natural Gas Events

- **Energy Resiliency and Hazard Mitigation**

★ Work on section underway



# Energy Landscape Contents

- Maps and catalogs key energy infrastructure, and graphs energy supply and demand
- **Presents a high-level overview of:**
  - Energy consumption – volumes, seasonal or other patterns, etc.
  - Energy delivery – infrastructure and supply chains
- **Comments—as relevant—on differences between rural and Railbelt consumption and delivery**
- **Developed using open-source data from EIA and other sources and informed by interviews with stakeholders**



# Stakeholder Outreach

- **Ongoing effort**

- 4 organizations interviewed, with more planned

- **Categories of stakeholders:**

- State agencies
  - Industry/utilities
  - Federal agencies, if needed

- **Information gathered from each organization:**

- Perception of threats and hazards affecting state infrastructure
  - Insights into energy delivery, including regional differences
  - Organization's role during energy emergency response, including regulatory authority
  - Communication methods

# Key Plan Sections Leveraging Interviews

- **Energy Landscape and Risk Profiles**

- Summary of Electricity, Liquid Fuel, and Natural Gas Energy Systems in the State
- Threats to Energy Infrastructure
- Risk Assessment

- ★ **Energy Security and Emergency Response Authorities**

- Key State Authorities and Statutes

- ★ **Energy Security Planning and Preparedness**

- State Energy Office Roles and Responsibilities
- Other State Agency Roles and Responsibilities
- Other Stakeholder Roles
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- ★ **Energy Emergency Response**

- Operational Playbook of State Response Actions During Power Outages/Electricity Events, Liquid Fuel Events, and Natural Gas Events

- **Energy Resiliency and Hazard Mitigation**

- Info also incorporated into energy landscape as relevant
- Questions about resiliency programs and actions may also inform Energy Resiliency and Hazard Mitigation, as applicable



# → Group Discussion on Threats/Hazards and Situational Awareness Tools

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# Threats and Hazards

| Natural Hazards                                                                     |            |         |           | Man Made/Technological Hazards |  |
|-------------------------------------------------------------------------------------|------------|---------|-----------|--------------------------------|--|
| Flooding/Erosion                                                                    |            |         |           | Cyber Incident                 |  |
| Earthquakes                                                                         |            |         |           | Equipment Malfunction          |  |
| Tsunamis                                                                            |            |         |           | Aging Infrastructure           |  |
| Volcano                                                                             |            |         |           | Terrorism                      |  |
| Severe Weather (Typhoon, Thunderstorms, Tornadoes, Hail, High Winds, Precipitation) |            |         |           | Dam Failure                    |  |
| Winter/Ice Storm                                                                    |            |         |           | Hazardous Material Accidents   |  |
| Glaciers                                                                            | Permafrost | Sea Ice | Avalanche | Supply Chain Disruptions       |  |
| Wildfire                                                                            |            |         |           | Surplus or Shortage            |  |
| Landslides                                                                          |            |         |           |                                |  |

Source: Energy Emergency Response Playbook, Alaska State Hazard Mitigation Plan (SHMP), State of Alaska Energy Sector Risk Profile,

| Sector                             |                                                                                                                                                                                  |                                                                                                                                                                                                  |                                                               |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Threat                             | Power                                                                                                                                                                            | Liquid Fuels                                                                                                                                                                                     | Natural Gas                                                   |
| <b>Flooding</b>                    | Damage power generation equipment, control center buildings, and distribution poles.                                                                                             | Damage to refinery process units, underground pipelines, and tanks.                                                                                                                              | Damage to underground pipelines.                              |
| <b>Earthquakes/<br/>Landslides</b> | Damage power generation facilities, transmission & distribution poles.                                                                                                           | Pipeline rupture or exposure, damage to refineries, wells, and pump stations.                                                                                                                    | Pipeline rupture and exposure, damage to compressor stations. |
| <b>Tsunami</b>                     | Damage to infrastructure from direct impact and resultant flooding and debris. Tsunamis are also historically associated with damages caused by earthquakes and glacial melting. |                                                                                                                                                                                                  |                                                               |
| <b>Volcano</b>                     | Damage to infrastructure from ash (tephra) fallout, lava flow, landslides, earthquakes.                                                                                          |                                                                                                                                                                                                  |                                                               |
|                                    | Tephra can damage transmission and distribution lines. Tephra can also damage turbines and generation operations.                                                                | Tephra can ground aircraft and limit fuel supplies to remote communities.                                                                                                                        |                                                               |
| <b>Wildfire</b>                    | Damage to power lines and power generation facilities.<br>Utilities may shut off power to prevent wildfires.                                                                     | Adverse road conditions impede fuel delivery to customers. Fuel is combustible if exposed, primarily impacting above-ground infrastructure. Smoke may force aircraft to ground, limiting supply. |                                                               |

|                  | Sector                                                                                                                                  |                                                                                                                                                                                                                                                  |                                                                                     |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Threat           | Power                                                                                                                                   | Liquid Fuels                                                                                                                                                                                                                                     | Natural Gas                                                                         |
| Winter/Ice Storm | Increased demand for heating/fuels can strain supplies. Thawing can also lead to extensive flooding.                                    |                                                                                                                                                                                                                                                  |                                                                                     |
|                  | Damage to transmission and distribution lines. Utilities may be forced to operate below reserve margins.                                | Adverse road conditions impede fuel delivery. Aircraft forced to ground. Freezing of non-weatherized equipment, including frozen product within refinery piping system, malfunctioning flow control equipment, flaring, and production shut ins. | Freezing may impact non-weatherized equipment, which can cause production shut ins. |
| Glacier          | Damage to infrastructure due to glacial flooding and ground failure.                                                                    |                                                                                                                                                                                                                                                  |                                                                                     |
|                  | Hydrogeneration can face short and long-term supply challenges with melting.                                                            |                                                                                                                                                                                                                                                  |                                                                                     |
| Avalanche        | Damage to transmission and distribution systems, generation infrastructure.                                                             | Debris may block roadways. Damage to refineries, tanks, and pipelines.                                                                                                                                                                           | Damage to pipelines and compressor stations.                                        |
| Sea Ice          | Sea ice can prevent delivery of petroleum products, or replacement parts. Sea ice push during storms can damage coastal infrastructure. |                                                                                                                                                                                                                                                  |                                                                                     |
| Permafrost       | Power infrastructure may face structural instability from thawing.                                                                      | Increased thawing of permafrost risks the structural integrity of pipeline and extraction infrastructure.                                                                                                                                        |                                                                                     |

|                       | Sector                                                                                                 |                                                                                                                           |                                                                                                    |
|-----------------------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Threat                | Power                                                                                                  | Liquid Fuels                                                                                                              | Natural Gas                                                                                        |
| <b>Severe Weather</b> | Blown transformers and downed trees may impact power lines.                                            | Power outages may impact refinery, terminal, or pumping operations. Ports and airports may be forced to shut down supply. | Power outages may impact select electric compressor operations.                                    |
| <b>Tornado</b>        | High winds can cause damage to power lines and power generation facilities.                            | High winds can damage refineries, terminals, and other above-ground facilities.                                           | High winds can damage compressor stations, regulating stations, and other above-ground facilities. |
| <b>Typhoon</b>        | Damage to power generation, transmission and distribution poles from high winds, debris, and flooding. | Refineries and stations may shutdown ahead of a storm for personnel safety.                                               |                                                                                                    |
|                       |                                                                                                        | Ports and airports may be forced to dock/ground vessels.                                                                  |                                                                                                    |

|                                        | Sector                                                                                                                                                                                                                                                                                                                                  |                                                                                                          |             |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-------------|
| Threat                                 | Power                                                                                                                                                                                                                                                                                                                                   | Liquid Fuels                                                                                             | Natural Gas |
| Cyber Incident                         | Informational technology and operational technology systems can be impacted; this can include company data, payment and scheduling systems, sensors, and control systems.                                                                                                                                                               |                                                                                                          |             |
| Equipment Failure/Aging Infrastructure | Underground pipelines may be more susceptible to components malfunctioning and oftentimes are built to lower specifications while being more susceptible to effects from corrosion and material failure, cracked mains and services. Rural areas are particularly at risk due to extensive periods without infrastructure improvements. |                                                                                                          |             |
|                                        | Line arcing, power surges, corrosion, or moisture on equipment can cause equipment to malfunction or go offline.                                                                                                                                                                                                                        | Corrosion, material failure, excess pressure buildup, or controls malfunction can damage infrastructure. |             |
| Terrorism/Man Made Damage              | Deliberate physical attacks on infrastructure. Human error can cause facilities to run outside of designed parameters.                                                                                                                                                                                                                  |                                                                                                          |             |
| Dam Failure                            | Damage to downstream infrastructure due to flooding and debris.                                                                                                                                                                                                                                                                         |                                                                                                          |             |
| Hazardous Materials Accidents          |                                                                                                                                                                                                                                                                                                                                         | Fuel truck, vessel, and pipeline accidents may limit delivery of supply.                                 |             |

# Discussion: Monitoring Tools

Please review the following list of situational awareness tools. Does your organization use any additional tools (including state-specific data sources) to identify and monitor energy disruptions?

- Federal weather monitoring tools through the National Weather service, InciWeb and other fire maps, etc.
- U.S. Department of Energy situational awareness tools
  - Sit reps, EAGLE-I, estimated outages
- U.S. Energy Information Administration (EIA) data products
  - Energy Atlas, Hourly Grid Monitor, Winter Heating Fuels, SHOPP, daily prices, etc.
- U.S. Coast Guard Homeport portal
- U.S. Health and Human Service (HHS) emPOWER map
- GasBuddy



# Additional Requests

Please send to us (at [Matt.Kelly@icf.com](mailto:Matt.Kelly@icf.com)) any agency-developed **data, maps, operational plans, or any other materials** that could be leveraged in the Plan.