Leading in the Energy Trilemma

A balancing act to net zero
Leading in the Energy Trilemma: A balancing act to net zero

Facilitator

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Principle Technical Expert, Risk Management
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Panel Members

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Global Construction, Projects, and Assets Lead
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Danny Splettstosser
Vice President of EPC Strategy
AES Clean Energy
Key Takeaways

- The solution to the Energy Trilemma is an energy mix – there isn’t a silver bullet
- Experience and experimentation are critical to successfully developing energy assets – especially as technology continues to evolve and new ones emerge
- Stay in the know – new and/or updated legislative, policy, supply chain, and other factors are happening at a rapid pace
- Leadership starts by starting – we have to be willing to innovate … and be wrong
- Be open minded to new ways and tools to plan and execute – partnering, generative ai, etc.
What is the Energy Trilemma?
Danny Splettstosser

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<table>
<thead>
<tr>
<th>Solar Energy</th>
<th>32,475</th>
<th>Gross MW in operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery</td>
<td>5,628</td>
<td>MW under construction</td>
</tr>
<tr>
<td>Water</td>
<td>~$27B</td>
<td>Elec. Gen.&amp; Dist. Assets</td>
</tr>
</tbody>
</table>

Recognized for our commitment to sustainability

9,100 people
14 countries
25M people served
6 utility companies
Global Energy Consumption by Sector 2023

- Power, 40%
- Transport, 19%
- Industry, 15%
- Buildings, 12%
- Other, 14%

~617 Exajoules Primary Energy

The Energy Trilemma

- Reliability
- Sustainability
- Affordability

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The energy transition must be led by the electric sector to achieve net zero by 2050

Source: IEA 2022 WEO
Energy Transition, A Massive Opportunity in Power Sector

Total Global GHG (CO₂-eq)
- Transport, 24%
- Buildings, 9%
- Power, 40%
- Others, 6%

75% Energy

Total Electricity (kTWh)
- Non-Renewable
- Renewable

More Electricity
- More Renewables

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AES’ Business Units are set meet the opportunity of the energy transition

Energy Infrastructure
→ Steam Turbine
→ CCGT
→ OCGT
→ LNG Infrastructure

Utilities
→ AES Indiana
→ AES Ohio
→ AES El Salvador

Renewables
→ Wind
→ Solar
→ Batteries
→ Hydro

New Energy Technologies
→ Green H2 (Fuel)
→ Fluence (Energy Storage)
→ Uplight (Energy Efficiency & Electrification)
→ AES Next (Incubation)

Corporate
→ G&A
→ AGIC

Significant Value Upside & Optionality
Predictable Cash Flows
Exponential Growth
Complementary Value Play
Lean and Mean

Energy Security
Green Electricity
Electrify Everything
Accelerating responsible and just energy transitions
How can we lead in the transition?
Garrett Fultz

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“A good plan is one that meticulously applies experimentation or experience. A great plan is one that rigorously applies both.”

- Bent Flyvbjerg, How Big Things Get Done (2023)
Solving the Challenges of the Energy Trilemma Will Take Everything We’ve Got

There is not one solution to the Energy Trilemma

There remains a significant need for an energy mix to deliver on the global energy demand and manage the tradeoffs within the energy trilemma.
Key Battlegrounds for Success

### MACRO ENVIRONMENT

<table>
<thead>
<tr>
<th>Geopolitical, Legislative &amp; Regulatory</th>
<th>Supply Chain, Skilled Labor, &amp; Innovation</th>
<th>Project Delivery Strategies &amp; Techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GLOBALIZATION</strong></td>
<td><strong>SUPPLY CHAIN DISRUPTIONS</strong></td>
<td><strong>INTEGRATED PROJECT DELIVERY</strong></td>
</tr>
<tr>
<td>Complexity &amp; nuance across markets</td>
<td>Expect them and build resilience</td>
<td>Share risks and outcomes across entities</td>
</tr>
<tr>
<td><strong>ENERGY POLICY &amp; LEGISLATION</strong></td>
<td><strong>SKILLED LABOR SHORTAGES</strong></td>
<td><strong>GENERATIVE DESIGN</strong></td>
</tr>
<tr>
<td>Funding, Risk Mitigation, Early Adoption</td>
<td>Repeatable processes &amp; knowledge capture</td>
<td>AI &amp; ML Design Optimization &amp; Prototyping</td>
</tr>
<tr>
<td><strong>CHANGING REGULATORY LANDSCAPE</strong></td>
<td><strong>INNOVATION</strong></td>
<td><strong>KNOWLEDGE ARBITRAGE</strong></td>
</tr>
<tr>
<td>Opening new opportunities in legacy energy sources</td>
<td>Is the new imperative – we must get comfortable with the enemy of excellence</td>
<td>Nth of Kind vs First of a Kind</td>
</tr>
</tbody>
</table>

The key to successfully navigating the energy trilemma at all levels is simple: LEADERSHIP
Dow and X-Energy advance efforts to deploy first advanced small modular nuclear reactor at industrial site under DOE’s Advanced Reactor Demonstration Program

Dow and X-energy sign joint development agreement to develop a four-unit Xe-100 facility at one of Dow’s US Gulf Coast sites

United States Department of Energy makes Dow a subawardee under X-energy’s Advanced Reactor Demonstration Program Cooperative Agreement

Dow and X-energy to develop and license technology applicable to other industrial customers

Source: Xenergy; x-Energy.com
Observations: How can we achieve the balance?

Alice Bullington

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A balancing act to achieve net zero

- Reliability
- Sustainability
- Affordability

Responsible Energy Transitions
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Fireside Chat

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