Energy Transitioning/Key Considerations: Jim Wimberly (Energy Security Partners, LLC) Arkansas Environmental Law Section Presentation

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Jim Wimberly undertook a presentation at the September Arkansas Bar Association Environmental Law Section Meeting titled:

Energy Transitioning: Key Considerations ("Presentation")

Mr. Wimberly serves as Senior Vice President, Energy & Economics, at Energy Security Partners, LLC, ("ESP") which is based in Little Rock, Arkansas.

ESP is a developer of commercial scale natural gas to liquids projects in North America.

The *Presentation* first addressed the concept of "Energy Transition," noting that:

. . . the entire energy sector is under intense pressure to decarbonize rapidly.

The purpose of such activities is noted to include reduction of greenhouse gases ("GHGs") and "in turn, global warming."

The impetus for concerns regarding global warming is believed to be driven by concerns regarding catastrophic changes.

A concern expressed in the *Presentation* is whether the proposed schedule is feasible.

Strategies identified as "currently being promoted" include:

- Transition to zero-carbon
- Electricity generation (100% decarbonization of the electricity sector by 2035)
- Transition to electric vehicles (50% of new LDV sales to be EVs by 2030)

Mr. Wimberly addresses four key questions:

- Are these the right strategies?
- Are these timeframes realistic?
- What are the anticipated results?
- What are some key considerations?

Both global and United States energy consumption are assessed. The two time periods considered include:

- 1800-2000 (Noting correlation between population and energy consumption)
- 2020-2050

As to energy consumption, Mr. Wimberly noted how United States energy consumption is allocated per sector, which includes:

- Residential
- Commercial
- Industrial
- Transportation

Transportation is also broken down by mode, which includes:

- Military
- Rail
- Water
- Air
- Freight trucks
- Buses
- Commercial light trucks
- Light duty vehicles
- Other

The current and forecasted fuels to be utilized for transportation are addressed. This is then correlated with data involving:

- Oil-derived products consumed in the United States
- Electricity consumed in the United States
- GHG emissions

A detailed discussion is then undertaken of decarbonization goals, transition strategies and key considerations.

As to electricity supplies, the goal is noted to be net carbon emissions by 2030.

Transition strategies are stated to include:

- Increased generation from renewables (wind, solar, hydro)
- Decarbonize existing coal and natural gas facilities
- Increase generation from nuclear?

Key considerations include:

- Generation from intermittent resources. . . backup options?
- Grid-level impacts?
- Land use impacts?

Other considerations include:

- How quickly can manufacturing supply chains be ramped up?
- How many new TLs (where/when)?
- Impact of global GHG emissions from coal-fired facilities in other countries

In terms of switching from ICE to electric vehicles, the goal of 50% of LDV sales to be EVs by 2030 is addressed.

Transition strategies are noted to include:

- Incentivize consumers to purchase EVs
- Subsidize deployment of charging facilities & other infrastructure
- Use lower-emission fuels, improve ICE efficiencies

Key considerations are listed as:

- Increasing demand for electricity
- Consumer Acceptance
- Battery Supply Chains
- Payload Impacts
- Resulting reduction in global GHG emissions?

The State of Arkansas's electricity profile is also considered in terms of net generation (total retail sales) and the role of criteria pollutants (which concerns have been overshadowed by GHG issues).

The importance of different types of zero-carbon generating sources in terms of intermittent (low capacity factor) and base-load (high capacity factor) are considered.

A study by MISO is noted, which is stated to have included:

- If intermittent sources exceed 50% of a grid's generation portfolio, then it could result in significant grid management challenges, jeopardizing the grid's reliability

The resource footprints of different energy sources are also listed. For example, the *Presentation* states:

- Wind farm: 52.5 acres/MW
- Solar farm: 8.3 Acres/MW
- Nuclear: 0.6 acres/MW
- Natural gas: 0.1 acres/MW

The related issues associated with energy use by light duty vehicles is discussed, noting:

- Energy consumed by LDVs
- Forecast of stock increases by various time periods
- LDV sales forecast

Another issue addressed is EV battery supply chain considerations, noting the importance of critical minerals and battery manufacture capacity. The potential for GHG reductions by fuel switching is considered.

The Presentation concludes:

- Switching half of the U.S.' LDV fleet from ICE to EV would result in ≈ 7% reduction in GHG emissions in the U.S.

Finally, Mr. Wimberly provides certain recommendations:

1. Demand for EVs needs to be better understood before public policies are enacted and massive expenditures are undertaken by Federal & State agencies.
2. Additional R&D is needed to increase the energy density of batteries.
3. Issues associated with battery supply chains must be addressed.
4. Increase the domestic production and use of lower-emissions fuels that can use the existing transportation sector infrastructure.
5. Issues regarding additional electricity must be addressed.
6. Is switching from ICE to electric vehicles an effective strategy for reducing GHG emissions?

A copy of the *Presentation* can be downloaded here.