Session A: System of Systems - Modeling to Guide the Nations Path Forward

(See pages 85-96 in the 2024 ASPIRE Annual Report)

Top Insights and Needs from Industry Members:

1. ***Technology Assessment**: Focus on **practical applications** of technologies, including **wireless power transfer** and **charging data** collection.*
2. ***Cost Reduction**: Seek **smart solutions** to reduce operational and deployment costs.*
3. ***System Optimization**: Address **power system scheduling** and **market design** to ensure operational efficiency.*
4. ***Collaboration**: Opportunities to collaborate on **data sharing** and **best practices**.*

Non-Technical Challenges and Barriers:

1. ***Public Education**: Increase **awareness** and leverage **social media** for better information dissemination.*
2. ***Affordability**: Make EV adoption more affordable, as it's currently seen as a **luxury item**.*
3. ***Political and Policy Friction**: Varying government policies affect **EV adoption** and public perception.*
4. ***Environmental and Infrastructure Concerns**: Address challenges related to **power grid capacity, road maintenance**, and managing the **transition to EVs**.*
5. ***System Standardization**: Push for **national standardization** across states to support mass EV adoption.*

Knowledge Needed by ASPIRE Faculty, Students, and Staff:

1. ***Interface Standards**: Establish **compatibility** across different systems for **scalability**.*
2. ***Wireless Technology Development**: Guidance on developing **wireless charging systems** and securing **key materials** like copper.*
3. ***Data Collection and Analysis**: Need for **large sample sizes** of reliable data to support research.*
4. ***Battery Lifespan and Recycling**: Address concerns over **battery aging** and **recycling** after the battery's end of life.*

Session B: Charging Stations of the Future - What will Define Charging Stations of the Future?

(See pages 97-108 in ASPIRE 2024 Annual Report)

Top Barriers to Charging Station Deployment:

1. **High Initial Investment**: Significant costs associated with infrastructure and equipment.
2. **Interoperability Challenges**: Issues with **compatibility** between different charging systems.
3. **Location Selection**: Difficulty identifying the right locations to maximize usage.
4. Delays in **permitting** and **lead times for transformers**.
5. Overcoming public skepticism and **awareness** of charging infrastructure benefits.

Desired Tools and Knowledge for Charging Station Work:

1. Tools to analyze **user behavior** and optimize station placement.
2. Knowledge of **who maintains** the charging infrastructure.
3. Focus on **training** individuals with **high voltage** and **system management** skills.
4. Availability of tools for **high voltage, high current equipment**.

Top Considerations for Charging Station Deployment:

1. Choosing locations based on **demand** and **accessibility**.
2. Focus on **affordability** and ensuring **cost-effective** solutions.
3. Ensuring **power availability** for high-demand locations.
4. **Infrastructure compatibility**: Ensuring **interoperability** of chargers and stations.

Key Skills and Capabilities for Charging Station Roles:

1. **System Design and Safety**: Understanding how to **design and install safe systems**.
2. **Experience**: Preference for candidates with relevant **experience** and **credentials**.
3. **System-level Knowledge**: Ability to work with **complex system infrastructures**.
4. **Local Environment Knowledge**: Familiarity with local **regulatory** and **environmental factors**.

How ASPIRE CSoF Project Can Help:

1. **Technician Training**: Develop and deploy **training programs** for technicians.
2. Improving **charging efficiency** and **scalability**.
3. **Collaboration with Industry**: Act as a **unifying platform** to connect institutions and industry.
4. Promote **standardization** across charging systems to improve **interoperability**.
5. **International Expansion**: ASPIRE should consider expanding collaborations to include more **international partners**.

Session C: Electrified Roadways – The Path to National Scale Roadway Electrification

(See pages 75-84 in the ASPIRE Annual Report**)**

Challenges in Building and Maintaining Electrified Roadways

- **Technical Challenges**: Maintaining advanced wireless technology and ensuring system durability against environmental wear.
- **Financial Hurdles**: High initial costs and the challenge of securing consistent funding from government or private sources.
- **Regulatory Barriers**: Need for new standards in construction, maintenance, and technology compatibility.

Policy Changes Needed for Electrified Roadways

- **Policy Consistency**: Advocacy for policies that remain stable through different government terms to support long-term infrastructure plans.
- **Regulatory Framework**: Calls for standardized procedures on power output, maintenance responsibilities, and the integration of technologies into existing road systems.
- **Legal Adjustments**: Necessary changes in road ownership laws and the definition of public versus private road use rights.

Financing Models for Electrified Roadway Infrastructure

- **User Fees**: Introduction of usage-based fees, like tolls, to directly fund roadway maintenance and expansion.
- **Public-Private Investments**: Leveraging commercial interest through public-private partnerships to fund initial and ongoing costs.
- **Tax Reforms**: Proposals for rethinking traditional fuel taxes, possibly replacing them with new taxes tailored to electrified road usage.

Session D: Pathways – Building the Future Skilled Workforce & Informed Public

(See pages 109 to 118 in the 2024 ASPIRE Annual Report)

Training Gaps and Needs

- **Responsibility and Safety**: Emphasis on teaching safety and responsibility across technical roles.
- **Emerging Technologies**: Need for updated training on new tech like lithium-ion battery safety.

Future Workforce Skills

- **Electrical and Technical Skills**: Crucial demand for skills in electrical engineering and technical maintenance.
- **Specialization and Adaptability**: Importance of specialized training in emerging technologies and adaptability to changes.

Hiring Challenges

- **Specialized Roles Hard to Fill**: Difficulties in filling highly technical roles such as electrical and systems engineering.
- **Economic Understanding and Diversity**: Need for better economic insight and diversity in hiring practices.

ASPIRE's Industry Connection

- **Enhancing Collaboration**: Suggestions for better integration with industries to bridge theoretical and practical knowledge gaps.
- **Skills Focus**: Industry seeks candidates with system-level knowledge and leadership skills.

Market Trends and Opportunities

- **Electrification Trend**: Growing demand for skills in electrification and renewable technologies.
- **ASPIRE's Role**: Recommended focus on filling educational gaps in line with industry trends.