



COMMISSION MEETING MINUTES

Electric Vehicle Product Commission
Purdue University
100 S Grant Street
West Lafayette, IN 47907
Friday, May 20, 2022

1. Pursuant to IC 9-13-3, the Electric Vehicle Product Commission (the Commission) meeting was called to order by Chairman Ben Wrightsman at 9:35 a.m. EST on Friday, May 20, 2022. The meeting was conducted in person and virtually.
 - a. Commission members physically present at the meeting:

Ben	Wrightsman	Battery Innovation Center
Danny	Ernstes	UAW
Rep. Mike	Karickhoff	State Representative
 - b. Commission member virtually present at the meeting:

David	Dukes	Stellantis
Mike	Maten	General Motors
Paul	Mitchell	Energy Systems Network
Rep. Carey	Hamilton	State Representative
Sen. Jim	Buck	State Senator
 - c. Commission members absent from the meeting:

Sen. J.D.	Ford	State Senator
Craig	Kelle	Toyota
 - d. The Commission approved the previous meeting minutes.

2. Opening Comments

Ben Wrightsman: I want to say thank you to Purdue for hosting us.

David Hummels: I am the Dean of the Krannert School of Management. We are excited to have you all here today. Purdue is working to develop a pipeline of employees to strengthen Indiana's ecosystem and competitiveness in the electric vehicle industry. We have recently launched a new degree program called Integrated



Business and Engineering; the students focus on the EV industry to provide solutions to companies.

Ben Wrightsman: To the Commission members, thanks for all your hard work so far, but I want to remind everyone that there is still a lot of work to do. Please continue to work diligently and be engaged. I do have concern, from a timing perspective, that we do not have everyone working as a group to complete the report.

Rep. Karickhoff: We need our private sector colleagues to step-up so we can make sound policy decisions.

3. Commission Purpose's update:

Michael Maten: I have a brief presentation to run through. In terms of engineering, this list looks similar to engineering needs for internal combustion engines (ICEs). We have the Wallace Battery Cell Innovation Center that we are opening in Wallace, Michigan to support research for EVs. There is testing in labs and garages, but we are not necessarily testing emissions. What we are doing is putting batteries in chambers and artificially aging them or going through temperature testing. One thing that is forgotten about is infrastructure, there is a lot that needs to be installed across the country. These components still need to be designed and built. Building the vehicles will change slightly, but the areas around it will change significantly.

David Dukes: Making the car will be the easy part, it is all the other stuff that will be complicated.

Michael Maten: Another aspect is safety. First responders will need special training. There is going to have to be a transition period, where dealers, technicians, and others have time for training. Battery cell manufacturing is going to be a big deal too. I do not think a transition to electric means a loss of jobs, there are going to be plenty of new opportunities.

Ben Wrightsman: I will see if BIC has any publicly available information that I can share. We work with large and small OEMs, and I think that there could be helpful data from cell and manufacturing perspectives. I think we also need to focus on Indiana specific data. The global perspective is important, but this report is meant to showcase what Indiana is doing.

Sen. Buck: In pictures of EVs, we often see a lot of horizontal surface area. Do you know if any one is doing research on the photovoltaic cell?



Michael Maten: There is a lot of research and activity in this area; however, the big issue is available surface area in the car. The amount of energy collected would be minimal, coupled with durability issues when exposed to the elements. What I can tell you is that anything that can save a kilowatt hour in battery costs is being looked at. The economics of EVs is so dependent on that battery cost, as opposed to an ICE vehicle. Anything that can help manage the battery is being studied.

Rep. Karickhoff: Battery manufacturing, including materials and infrastructure, is going to be become a competition between the western world and Asia. They will be competing for critical materials.

Ben Wrightsman: This raises the question of supply chains. Even for ICE there can still be significant logistical issues. Adding another power supply unit will create new possibilities for problems.

Purposes 2,3,4, & 7

Danny Ernsts: Regarding our research proposal, I have been able to secure the funding from my organization. Next week, we will start the project with Purdue. By the next meeting, we will have a detailed timeline. We are looking to finish the research by August 15 and that includes the final report. The research will be assisted by Ivy Tech.

Purposes 6 & 7

Ben Wrightsman: I have requested information from the Battery Innovation Center regarding growth opportunities. Again, it is important to note that we are working on more than just the EV space; batteries are important to so many other industries. We put together a list of competencies that we have seen for EVs but it also talks about other areas that complement EVs.

Paul Mitchell: From an Energy Systems Network perspective, we should reference not just physical assets, but also the business models that benefit from electrification, especially in the mobility space. There are many growth opportunities beyond cars.

Rep. Karickhoff: Without expanding the scope of the Commission, I do think it is appropriate to keep the ecosystem narrow but mention other forms of energy storage and distribution in the transportation arena.

Paul Mitchell: My thought is that this fits in section 6 of the report which talks about future growth opportunities. We could do immediate, midterm, and long-term growth



opportunities. Immediate could be investments that are already going on. Midterm could be things that focus on traditional EVs (supply chain, infrastructure, and manufacturing). Future growth would be stuff that we want to put on the radar. This activity would prove to companies that Indiana is a leader and partner in this space.

Purpose 8

Ben Wrightsman: For research and development (R&D), I had stuff about materials and mining opportunities. I think there is an opportunity for converted coal mines to participate in the electrification space. We will still need mining and drilling for electrification to work, not to mention that we need to transition away from foreign supply chains.

Michael Maten: There is a lot of R&D going into innovative extraction techniques. Conversations need to start now, permitting and drilling is a lengthy process.

Rep. Hamilton: This year we passed legislation for mines to be converted so they could generate power via hydro technologies.

Further discussion

Ben Wrightsman: We are ahead of the global trend. Indiana is a leader in the United States in terms of what we are studying here. As a group, we need to keep up the hard work and share what we are doing.

4. Legislative Update:

Rep. Karickhoff: In the coming days, I am going to have a conversation with some Utilities Committee members and Utility Commission members about the overlap of our work. We want to figure out where each of our groups should focus to make an impact.

Rep. Hamilton: As we think about charging infrastructure, it is important to include equity in that conversation. Also, it would be interesting for some or all the Commission members to take a trip to DC to share our work.

Sen. Buck: We need to make sure we are getting ahead as a state to make sure we have good infrastructure for chargers and the like.

5. New Business:



Paul Mitchell: ESN has been studying hydrogen for several years. Cummins has made significant investment in hydrogen, especially green hydrogen. We recently looked at what Indiana could be doing in this space, and the General Assembly passed a carbon sequestration bill this year. All that is to say, there is a push at the federal level to help Indiana secure a hydrogen hub grant, but it will likely have to involve other states. There is an opportunity for hydrogen in the transportation industry, but there are still many conversations and research that must be done.

6. Public Comment:

James Clig – Purdue University
Could you briefly describe the work of the Commission?

Rep. Karickhoff: We created this group to look for growth opportunities and maintain our leading manufacturing status.

Anath Iyer – Purdue University
We are excited to work with this group as Purdue has been involved in this area for years. It is exciting to see the intersection between policy and technology, we want to educate our students on these areas.

7. Closing Remarks:

Ben Wrightsman: I appreciate the engagement today. Please be on the lookout for action items.

8. Scheduling of Future Meetings:

Tentatively scheduled for Friday, June 3 at 9:30 am. The meeting could be held at the Battery Innovation Center.

9. Adjournment:

The meeting was adjourned at 11:25 am by Chairman Wrightsman.