Discussion Responses

Wisconsin Freight Advisory Committee

May 8, 2024

Intermodal Report Update – Room Discussion

What factors have had the greatest impacts on international intermodal since 2019?

- Covid – rerouting of containers – with ports closing, containers ended up in different areas of the world than where they were expected.
- Manufacturing - shift in flow away from China and East Asia to Mexico and South America – tariffs, etc. as drivers – ocean carriers are involved with moving more subcomponents (from China to Mexico) rather than finished products.
- Disruptions to international shipping lanes – Panama Canal passage limits from drought, diversion from Suez Canal due to attacks, other global events.
- Drivers for drayage – still a shortage. Trucks needed for first- and last-mile shipping, even if train capacity is there.

What factors have had the greatest impacts on domestic intermodal since 2019?

- KCS and CP merging to become CPKC, followed by the responses from other Class I railroads to increase efficiencies and extend markets for Midwestern businesses, especially for shipments to/from Mexico
- Tariffs – shifting from China to Mexico for manufacturing; overseas vessels now deliver components to Mexico for assembly
- East Palestine, Ohio derailment/explosion on Norfolk Southern, and the push to improve domestic rail safety
- Corporate policies that encourage sustainability, and the interest in modal changes to use more rail (diversion from trucking)
- Fuel costs – were lower in 2019; but rail still not as advantageous in price
- Railroad business models and cargo selection – prioritizing cargoes with higher profit margins; greater adoption of Precision Scheduled Railroading
- Change in electric generation by utilities – coal volumes have fallen over the past decade
- Consumer prices and inflation – changes in demand for goods
- "Amazon" impact – building warehousing adjacent to intermodal terminals.
- Alternative fuels (hydrogen, etc.)

What data trends are most important to identify?

- Imports – volume into Wisconsin. Data is elusive.
    - If containers are terminating on the coasts, the contents come into Wisconsin by semi trucks.
    - When the marine containers stay near the coasts, there are no empty containers for Wisconsin's exporters.
- Business changes – Which ones are coming into Wisconsin / growing?

    - Microsoft (data center – Racine County)
    - Haribo (Pleasant Prairie)
    - Etc.
    - What businesses have left?
- Migration / demographics – Employment pool of workers and base of customers
- Sourcing of raw materials and intermediate components, changes in trade lanes as the sources change
- More coal plant closings; fewer coal trains / corridors
- Nearshoring / Mexico – change in source locations / trade lanes
- Truckload rates – shippers prioritize price
    - Customer pricing for trucks currently has an advantage over intermodal
    - Trucking also has advantage for speed and flexibility
- Automation / pricing impacts
    - At ports – loading/unloading of containers
    - Rate of implementation
- Domestic intermodal versus international – especially with incentives for domestic manufacturing, volumes / lanes may be changing
- Understand trade with Mexico
    - Laredo is currently busiest port in the U.S.
    - Cargo exchanges at border – truck problems
    - Granularity
    - Intermodal: Safer / less theft / smoother customs / no stoppage
- Future congestion at Chicago terminals
    - Overall freight / intermodal demand for region; future trends
    - Potential for WI to handle future regional demand
- Private sector sustainability initiatives
    - Which products are most likely to move via intermodal?
    - Attraction / advantages of intermodal
    - Who will be strongest advocates?

What sources of information should be used to update the report?

- Per M.E. Dey: Import Genius, Pangaea, Yeti
- Need sources with manifest confidentiality drawing from Bills of Lading
- WEDC – Wiser Trade – Recipient with DATCP
    - Mostly exports
    - Uses Census data; can determine exports by county
- WEDC – targets for attraction
    - Identify future freight demand
- Regional economic development organizations (M7, etc.)

Freight Electrification Discussion

Question 1a: Which modes / freight operations do you see as most conducive to electrification?

Tables 1 & 2:

- Short-haul operations are more conducive.
- Limited on range, especially when considering weight.
    - Schneider's trucks are 4,000 lbs. heavier for electric trucks so that even with the 2,000 lb. federal allowance, they still total 2,000 lbs. heavier.
- Kwik Trip – electrification doesn't work for most instances except EV yard spotters.
- EVs eat through tires 2x faster considering their weight.
- Radius for EV trucks for Schneider around LA is 75 miles. Range of 75 miles at most with an average 35 miles.

Table 4:

- Short haul, light weight, and expensive
- More of an opportunity in rail and water
- Air??
    - Starting to electrify planes, small planes for light loads
- Milk runs, single plant run around the city
    - Fixed routes
- Mining trucks
- Fork trucks
- First/last mile

Table 5:

- The most conducive mode would probably be trucking. Schneider noted what to focus on first – short-haul. As charging gets better, they could expand to longer modes. For trains, work has been done on electric but long-haul is a problem. Hydrogen fuel cells are being developed, but that's just in the experimentation phase right now. Not quite to scale yet.
- Start with lightweight trucks first.
- Would there be any electric potential for harbors?
- There are efforts to experiment with zero-emission ships. With ports, it's focused on dockside infrastructure first. Not sure about the Great Lakes fleets.
- Port equipment can be electrified.

Table 6:

- Short haul, light weight, fleets, postal carriers, Amazon easier to electrify
    - Last mile, around the facility
    - Less than 50 miles
    - Overnight parking operations
    - Refrigerator applications where there is built in downtime

Question 1b: Which operations will be more challenging to electrify?

Tables 1 & 2:

- Fuel tankers
- Longer distances / long hauls
- People who are left out of the loop in regard to alternative fuels are emergency vehicle drivers. Need to remember that first responders need training for any issues with EV accidents.

Table 4:

- Target loads that are heavy; look at logging.
  - The difference between regular and irregular routes.
  - Irregular routes need a lot more planning, especially out in the middle of nowhere.
  - The ability to predict charging availability - knowing where reliable charging stations are.
- Wisconsin cold climate state
- Long haul range problem
- Charging a battery from zero takes a longer time, after getting to 80% the charging is also much slower.
- Is charging while sleeping a reality for long haul drivers?
  - There is a need to have a battery for 700 miles to get through a whole day of driving.
- Each business model will need a different charging situation.
- Electrified rail?
  - High volume routes where there is a sufficient amount of value to justify overhead rails.
    - Would that be copper wire?
    - Yard switches for battery electric
  - TOPS Lab looking at conductive charging for cars.
    - Safe for pedestrians
    - Could that work for rail?

Table 5:

- Air would be a hard mode to electrify.
- I remember hearing someone wondering whether charging stations exist for airplanes?
- There is potential for electric with local delivery services in urban areas.

Table 6:

- Intermodal not as reasonable with wait time

Question 2: What are the biggest hurdles you see for expanding the use / reach of freight electrification? Which are the most important ones to address?

Tables 1 & 2:

- Cost
- Utilization for different fleet types – EV fleets would need to be larger (to be practical) due to charging times and ranges. May also need different vehicle types.
- Diesel prices could impact the appetite to consider larger investment in EV or other alternative forms.
    - Why aren't we going to other alternative fuels like natural gas?
    - Methane gas from dairy farms - Over 70% is being collected from bio-digesters; the tech is close to being operational.
    - Hydrogen blends?
- Long lead times for equipment and infrastructure
- In a national scope, you have to work with different layers of local and regional government and different utilities, which can change operational model.
- Cost of electricity has a large range.
- Grant funding to offset equipment costs is mostly state driven and varies by state.
- May or may not be a secondary market for freight EVs – unknown at this time.
    - Trucks may last 5, 7, 10 years, no one's sure either.
- Batteries are extremely expensive, along with other needed components (e.g., air compressors).
- Heating the batteries pulls a lot of energy, which is important for a climate like WI. More difficult than cooling.
- When you have an issue with EV trucks, towing is inevitable.
- Go through tires twice as fast with EVs.

Table 4:

- Infrastructure costs
    - Infrastructure materials
- Labor, workforce shift
- Power generation, just for personal EVs need to increase 30%
- Range anxiety
- Battery safety for first responders
- Extra equipment costs
- Coordination between all the parts needed
- Electricity distribution, you can't "truck" electricity
- Utilities, OEMs, chargers
- Truck replacement, wear, repair networks
    - Trained technicians
    - Trading one nonrenewable resource for another, look at renewable resource sustainability
    - Batteries can be recycled

Table 5:

- Cost is a big hurdle. Cost of fleet for the initial investment in vehicles. Cost of infrastructure as well.
- The technology could be different a few years from now. If you're the owner of a fleet, that could make deciding what to buy difficult.
- Lack of truck parking is an issue right now. Would having an adequate number of charging stations for trucks be an issue?
- Various industries are slowly dipping into electric vehicles. Without a Level 2 charger, it could take up to a whole day to charge with a 110V outlet. Seeing how electric will change day-to-day operations.
- Seasonality is also important – The functionality of EV's drops 30% in winter. Companies are just being cautious and risk averse. They are saving money for when new battery technology comes. These are new and unfamiliar technologies, and they are understandably nervous about it.
- The dwell time to sit and charge a battery is a challenge.
- Capacity of storage is a hurdle. As well as disposal and recycling of the battery.
- Can land grants cover land acquisition? There's a lot of NIMBY sentiment with truck fleet charging stations. Possible to get subsidies towards it?
- Capacity issues are a hurdle. Existing big truck stops would be good, reasonable for charging stations.
- In rural areas though? For example, Hwy 29 is a corridor, though not much is on there.
- If you are a private truck stop owner, there is a cost-benefit analysis to it.
- Lack of charging infrastructure keeps people away from it in the passenger world. For freight, it would be good to focus on a few major corridors first. Another idea would be to survey the trucking companies.
- There is so much to do with just passenger vehicles that freight may have to take more of a back seat until passenger/light-duty becomes more practical. There is a lot to do just for those vehicles.
- The presentation from Schneider did show some amazing numbers for capacity and such.
- Possibility of a different solution for long hauls? CNG fuel option? Short hauls and long hauls may need to take different paths.
- Hydrogen fuel cells could be an option for long-haul trucks. Not sure where that's at right now.
- Battery weight differential is an issue.
- In 20 years, the situation will be different. For short haul trucks, the difference would be huge.

Table 6:

- Grid capacity management
- Parking facilities, needing to park specifically at charging sites
    - Hours of service, needing to coordinate schedules
    - Low access to fuel availability, parking and resources (restaurants)
- Smaller operators that do not have charging hubs would struggle
- Cannot install at rest stops
- Extra battery weight, legislative changes needed, design changes for bridges and roads, wear on tires
    - Weight and capacity needs

Question 3: What are the biggest advantages you see from expanded freight electrification? How will you and your organization benefit from those changes?

Tables 1 and 2:

- Drivers really like driving the EVs once they get over the range anxiety.
- Quiet; drives smoother
- Lower emissions

Table 4:

- Battery engine will accelerate faster and has more torque
- Help reach goals of zero emissions
- People who live and work in congested areas better air quality, even in the rural areas
- Sustainability
- Regenerative breaking

Table 5:

- This could attract new truck drivers who are interested in EVs. Could be good for recruitment. For emissions, this would pay big dividends in places like the Milwaukee area that have air quality issues.
- Environmental benefits would be the biggest.
- With electric, there are fewer moving parts to deal with.
- EV's have lower maintenance costs, less parts, benefit of regenerative braking.
- Maintenance should be less.
- In the electrification report, saw that electricity pricing is less volatile than other fuels. There is also the consideration of off-peak charging rates as advantages.
- Good for trucking companies' budgets.

Table 6:

- Will not take advantage of tax write-offs, more "feel good"
- People most likely to use on the farm itself vs on the road
    - Low capacity in these rural areas, power consolidation with changes in the industry
    - Custom operators work with specific functions that they perform, potential to be an early adopter but have a compressed timeframe that lower use
    - Electric doesn't have the concerns over needing to prevent leaks to diesel tanks – costs of environmental compliance are high for fueled vehicles
    - Not operational improvements
    - Accommodations to front and back end but not anything in the middle

Question 4: How do you view the current public-sector efforts towards freight electrification? What elements are best, and what elements could be improved?

Tables 1 & 2:

- Over the road charge network needs to be improved for classes 6-8 – essentially doesn't exist at all. Some private operations but no public charging areas.

- Could this be done by private industry similar to what Tesla did/is doing?
- Private industry offering charging areas – need pull through stalls, slow charging time and parking are issues. Need faster chargers – and chargers that are working and reliable.
- Model is 1 for 1 equipment to driver
- State is doing well on the EV personal vehicle infrastructure
    - What to do with rates & taxes, etc.
- If you could get 450-500 mile range to make a full shift would allow expansion of EV.
    - That is the standard travel distance for diesel-powered freight vehicles.
    - Charging stations every 50 miles along freight routes would be the "sweet spot".

Table 4:

- If the government would let the market innovate and not rely on the government.
- There are already new technologies that are coming out that might be better than electric and the private sector will drive that innovation.
- For example, Nikola, hydrogen trucking – challenges are leaks and highly flammable.
- How can we work together to make this work better?
    - Coordination between local and state government and private sector.
        - Being able to properly move the federal funding
        - Electrical systems and manufacturing
    - There is a global perspective.
        - Need for standardization
        - Better air quality and quality of life for everyone

Table 5:

- The IIJA money for infrastructure is great. Good to have infrastructure for the public to utilize charging stations.
- The amount of federal investment right now is about right. We'll see where things are at 10 years from now.
- There are different state standards. Wisconsin doesn't have any real EV incentives.
- There never were incentives for gas stations way back.
- There was heavy federal involvement in initial Interstate highway development.
- This overlaps with CAV's, with having a pilot program and regional corridors. Where can we match up with other states, and not just stop at border? (Ex. Blatnik) Important to connect to something. (Ex. Aurora – would they need to be responsible for the whole I-94 corridor?)
- With a Tesla, you'd have this well-planned out network, would be the same charging experience.
- Tesla did it because they needed to.
- For Tesla and electric trucks, is there a plan?

Table 6:

- Just getting started, still trying to figure out standards, what model will succeed.
- Seems too soon for public sector to get involved since there are these questions still in the private sector in trying to build this up.
- Public sector bringing incentives, financial benefits on these ideas.
- Spurring innovation, providing flexibility in operations, not only looking at one option through incentives.

    - Zero emission NOT just electrification – can be hydrogen.
    - Too early to answer second part - need to wait for developments in the industry with battery weight, range.
- Safety training for first responders and industry consistency with emergency power disconnect and inspection of safety.
    - Evaluation of self-diagnostics but no national standard
- Insurance policy going to indicate start.

Question 5: How do you see the private sector adapting to freight electrification? What modes or services will be critical to watch?

Tables 1 & 2:

- Commenter doesn't see costs coming down because the tech is advancing so quickly.
- Market needs to get the Return on Investment to meet needs / costs
- Diesel is going to take big jumps in costs
- Do not see the costs on EV technology coming down
- 2027 emissions and 2030 regulations for warranty standards will increase costs
    - Increase in maintenance costs

Table 4:

- Short haul
- Pickup and delivery
- Rail
- They will adjust where there is a competitive advantage
- Area to watch is trucking

Table 5:

- Makes the most sense to start where it would be most profitable.
- Freight transport world is more bottom-line driven than the passenger world. They won't just buy a new electric truck just because it's cool. Amazon is moving to electric. Interesting to see where FedEx and others follow. They are good candidates as delivery vehicles, since their driving distances are local.
- As for buying used electric vehicles, do they go obsolete sooner? That's a hurdle to implementation.
- Mechanics need to learn about EVs. Issues such as battery life, degradation.
- It's an upheaval. There are different battery types, and they keep changing. People put money towards some technology and it becomes obsolete.
- The car industry has been so stagnant for a while. Now things are changing lighting fast. For Schneider, I could see it being really tough to figure out investments because it's changing so fast. Kind of like smartphones.
- There's a lot of lag time from the grant application process to execution time.
- Noticed no price difference in 5 years. If the cost could even out for freight, electric will be more appealing.
- We should figure out what we can produce ourselves versus what we need to get from other countries to help reduce the cost.
- Most metals come from elsewhere.

- Other methods that are non-battery? "Sail-car"
- Curious about rail, and its ability to electrify. Put EV investments in rail, electric trolleys, etc.
- Rail is important to pay attention to since there is so much research there, etc. It's a natural transition. And smaller delivery vehicles are critical to watch too. Incentives to local businesses for their fleet would be good.

Table 6:

- Seeing it in shorter routes, first and last mile, moving equipment around on the sites
- Do what's needed for tax credits, PR points but don't have incentives after these conclude.
    - Private sector adapts due to margins, if profitable than adopted but could go back to whatever rides the best margins – as incentives go away what stays vs what leaves.
    - Looking at electricity costs – adding electricity costs money, will end up on a utility bill, need to look at for infrastructure.
- Charging station installation gets you ahead in CA, but what do the profit margins look like?
    - Do various fuel costs balance out as infrastructure is built – need to watch the cost of fuel.
    - Watch added cost of fuel infrastructure following construction.
- Looking at time horizons, need to take into account all of the factors, but also regulations (fossil fuels, etc.) on how to make the right decision.
    - What are costs with going along with ideas such as electrification vs not going along with it?
- Let passenger vehicles explore and then draw to the fleet/heavier duty sectors but goal needing to be hit doesn't allow for this.
    - Need to start now to hit goals.
    - Need smaller initial scenarios to start a new technology approach vs all over. Early adoption needs to be on a smaller scale – example of TX/MI corridors with automated vehicles vs fully on system.
- Are there enough minerals to power all of the batteries, adding in geopolitical problems?
    - New batteries in development, iron-based technology
    - Even if the resources are there, will there be access to them?

Table 3 Collective Discussion:

"Our table didn't necessarily follow along with the questions; however, we did glance at them occasionally to make sure we were at least touching on the overarching themes." Therefore, table notes are provided as submitted, with comments anonymized (F: Facilitator; M: FAC Member [numbered to differentiate]).

F: What were some of your main takeaways?
M1: It's all about rightsizing.
M2: It's not one-size-fits-all.
M1: Schneider's trucks work with help from the government. Over-the-road drivers might have a harder time. It's different in Wisconsin than in Florida.
F: In North Dakota, you've got long stretches without a station.
M1: Temperatures can also have an effect.
M2: I just think it's going to be a longer transition than most people think, and not a straight line. There's going to be ups and downs.
M3: That's not a bad thing.

M2: We're going to learn a whole lot.

M3: We didn't talk about a drop-in battery scenario where people don't have to wait for a charge.

F: Where does grand vision meet actual capabilities. … I think a lot of people have a zero-emission vehicle, but it's not zero emissions when it comes to the plants where it's assembled or the freight that transports it.
M2: Another FAC member explained we're taking things off that are highly productive for things that may not be as highly productive.
M4: There's no one silver bullet/bucket to this. When you're looking at freight – Amazon/FedEx/UPS – that's where you'll see it first. Jeremy Hock made a great point, when you look at this, you need to look at the grid capacity. When you put in a heavy-duty setup, there's a lot behind the scenes and on the fringe that has to be taken into account. You can't put it everywhere; you've got to look where the grid can handle it. I think the feds need to try harder.
M2: We're going to need state funding if federal goes away. Focusing the dollars on high-traffic corridors where we already have infrastructure is important.
M4: There are states with no infrastructure, like the Great Plains.
M3: They also have transmissions issues.

F: What does success look like?
M2: It's the Amazon, the postal truck, the lowest-hanging fruit. Start with what's easy.
M1: We should be talking about some of the ways previous energy came about. We didn't just have gas stations pop up because of entrepreneurial spirit; there were a lot of subsidies given to gas companies and still today. … That's not necessarily a fair argument, but it's complicated. Being honest and acknowledging there's going to be some hiccups. As long as you can show progress, that's important.
M2: If you can show success, you can make inroads on heading toward zero emissions. The other thing is short hauls don't require us to have coordination with other states. Talking about the Dakotas, we can't control that. Why should North Dakota pay to have you drive through its state.
F: From the talks today, you can't control Mexico. You can't mandate that Mexico have charging infrastructure.

M3: I don't understand the rail system and how that electrification process happens.
M4: There's freight and passenger. Passenger has been electrified a lot of places; freight is a different story.
M3: Why?
M4: There's a cost. Freight is up to 40-50 years. Overhead [stuff] doesn't work in some areas. Rolling plains are great; hilly, not so much. It's a longer time frame for freight. As transportation electrifies and diesel goes up in price, railroads need to get on board. Railroads can use their rights-of-way to make the whole grid more electrified and make some revenue in the process. There have been dialogues, but it's a long process. We're trying to put together a roadmap. Maybe it should start in the railyards.

F: What are the benefits of being environmental to the business world?
M4: Unrest in the Middle East could affect the cost of fuel. If diesel keeps going up, it could have an effect.
F: If we have energy security, we can have more affordable energy.
M1: The cost of us ramping this up now is different versus a decade ago versus a decade from now. The cost of waiting would be forcing us to do it even quicker. So, even though we don't NEED it tomorrow, it's going to help us in the long run to start now.

M2: And we learn by doing things.
M3: There's a cybersecurity risk to ramping up quickly; we've got to have security standards in place. There might be security benefits to electrifying, but there might be risks to the grid.
M1: A lot of people are focused on the siting of charging stations. But there are side effects. What's going to happen to all these gas stations? They're not going to be able to survive on being a convenience store, and some of those places are an oasis in a food desert.
M1/M2/F: Closing down gas stations leads to a lot of side effects. Having to clean out unused underground tanks and all sorts of things.

M3: To M4's point, this money could all go away.
M4: How is the private sector spending its money? Is there something we could learn from them or something we could do to spur the private sector if government money dries up?
M1: Semiconductor manufacturers and data centers require a lot of electricity. Is there a surcharge being placed on them?
M3: Then there's also the transmission down the line.
M1: So, who eats that cost?
M2: $5 billion is a drop in a very, very large ocean. It's not enough to get the ball rolling. I would highly doubt the private sector would pick it up. This could end up being just a phase. Passenger rail under Obama – let's go! Now we stop. We always put the money on something, then we stop. We don't keep funding things. The initial money is just the seed money. But we need to keep funding the initiatives.

F: Do we make the private sector lead this? Should a similar model be done here where the private sector pushes it, or should the public sector continue to lead the charge?
M1: The private sector is making some money already.
M2: But they're already pulling back a bit.
M1: They are still building factories; they know what's coming. My concern is, are we putting anything in these agreements that are tying the private sector to follow through with things. I think most are making big enough investments that they won't cut and run. But I could see them placing ultimatums with states that they'll pull out if they don't get some benefits. There are a lot of unknowns.
M2: I think it'll be a mix of public and private.
M1: If the private sector starts demanding more from the public, that could have negative impacts. All of a sudden every household is paying 3x what they were.
F: Then maybe you start seeing location shopping.
M2: That happens now. If I were a big company, I would be location shopping to get the best benefits.

F: One thing I haven't heard a lot about – not just trucks/trains, it's also boats/planes. Are there certain modes where we should back more than others?
M4: I think they're looking at different types of fuels for planes. Not sure about electrifying.
M1: When you're talking about air freight, it's such a small portion of overall freight.
M2: Trucks are a more likely avenue to focus on electrification, more so than plane or boat.
M1: If you're going to focus on emissions, focus on the passenger transportation rather than freight.

M1: Going back to intermodal, what about Camp Douglas? It seems like the perfect location. Got rail access, got two Interstates. Underutilized land.

M2: I think the private sector will adapt to electrification as it fits their business model. Look at Schneider, they're figuring out how to support it. Private will probably do better than public.

F: Companies tend to adapt when their competitors do something rather than when the federal regulators tell them to do something.
M2: You have to see evidence of something before you're going to invest in it.
M3: They're already invested in electric elsewhere.
M2: If you're a small company, you can't adopt it until several generations out. Just like me, I'm not getting an EV right away. I need to see proof that it works. And when they're not so expensive. And that's another thing, the costs of those cabs. As they come down …
M3: The cost of maintenance of an EV is allegedly lower compared to a regular gas engine.
M1: For the motor, yes. But not for the tires. Because they have to deal with heavier loads from the 8,000-pound batteries.

M2: The general public is apprehensive about EV. … They don't like the fact that you're telling them what to do compared to them deciding on their own.
M1: In dense, urban communities, electrification makes more sense.