

Appendix: August 6, 2019 Freight Advisory Committee – Tabletop Exercise Comments

Tabletop Discussions – Cold Supply Chain

Q1: What factors make cold chain logistics important to Wisconsin?

- *What sectors/business in the state have greatest reliance on cold chain logistics?*

Table 1 (T1): Food/beverage/agriculture – comprises 66% of state’s GDP. Other sectors include pharmaceuticals, movement of hot/cold products for the chemical industry.

Table 2 (T2): Cold storage providers, grocery operations (perishables, including food manufacturing - frozen pizza and inputs such as tomatoes), pharmaceuticals, chemicals. Fresh food products – vegetables, potatoes, cheese, meat packing (Schreiber Foods). 85% of Kwik Trip’s products come from a 6-state area.

Table 3 (T3): Food products (snap beans, cranberries, ginseng, dairy farming), fruits and vegetables in general (including processing), other processed foods (mozzarella, ice cream, butter, frozen pizza).

Table 4 (T4): Agriculture, pharma, retail, food & beverages (alcoholic), cheese.

Table 5 (T5): Both big farms and smaller farmers’ market farms; milk, cheese, dairy, and frozen processed foods; meat, frozen vegetables, food manufacturers, and pharmaceuticals; farming in general; fishing (e.g., Lake Superior whitefish)

Table 6 (T6): Dairy (milk, cheese, ice cream), fruits and vegetables, perishable products (shelf life), retailers/grocery stores, consumers.

Table 7 (T7): Dairy, vegetables, meat, pharmaceuticals.

Table 8 (T8): Agricultural products (dairy, vegetables, meat) and food products; pharmaceutical; industrial/manufacturing.

- *What elements of the cold chain are most important to these sectors/businesses?*

T1: Precision, timing, documentation, efficiency at warehouses, capacity, turn-around time.

T2: “Weakest link” – Transiting (trucks, roads, regulations – hours of service, congestion, truck parking and local rules): one size does not fit all. Kwik Trip brings in 25 truckloads of bananas a week from Galveston to La Crosse. Container utilization (use and availability) needs to be improved.

T3: Networks of small and large producers, connecting carriers to producers (last mile), providing infrastructure, energy/efficiency for vehicles (electric/alternative fuels), warehousing efficiencies, charging stations for electric vehicles/equipment.

T4: Cheese – ages on trains. Pharma – security with time and temperature monitoring – higher level of regulatory requirements. Chain of custody requirements. Alcoholic beverages and taxes. Agriculture – processed vs. unprocessed; live animals vs. processed. Milk – timing and temperature; processed vs. unprocessed. Retail: right product at place and time; loads with at least 3 different temperature requirements. Less-than-truckload: managing logistically more difficult because they “do it all.” Urban vs. rural – different needs. Urban truck parking.

T5: For the food and pharmaceuticals industries, safety and prevention of spoilage are most important. Also: energy / electricity, intermodal capabilities, regulation, refrigerated trucking (especially the energy required), speed of delivery, time sensitivity.

T6: Timing/shelf life, movement to processing to storage, ability to transport, availability of good roads, labor/worker availability – capacity and reliability.

T7: Capacity is tight for both trucking and storage, causing higher costs. Cold storage, truck transportation availability and costs are concerns – milk production.

T8: Product integrity, costs, equipment availability, proximity, training, energy use, chain of custody (traceable/tracking).

Q2: What societal or technological changes are most likely to influence cold chains in the next decade?

T1: Connected and automated vehicles, changes in packaging (more eco-friendly packaging – ban plastics/Styrofoam/polystyrene). Buying local and organic – demand for fresh products. Weather extremes.

T2: Consumer demand for speed – get it NOW. Customer will pay; seller needs to apply forecasting/predictive analytics to be ready. Products with shorter shelf lives – organic/lightly-processed foods, local products. Second- and third-generation sensors – far beyond RFID. Seneca in Janesville as example.

T3: Storage – network of storage facilities with transportation; first-mile/last-mile infrastructure focus; connecting carriers to producers. Energy efficiency in supply chain (clean energy, electric vehicle flatbeds and refrigerated trucks) – three solar companies were looking for locations to site and connect to the grid. State should develop maps displaying where reefers can be recharged overnight truck stop facilities and warehouses. Better transparency is needed for product traceability – incorporate supply chain tracking with food safety records. Improve tracking logistics. New marketplace: e-commerce for perishables. Uber Freight. – available “on demand. Question: which first/last mile area needs the most help? This should include ports. Which is hardest to implement – first mile in the field with refrigeration needed?

T4: Energy used for idling/keeping items refrigerated (clean diesel, battery power) - energy use linked to environmental protection. Home delivery adds a layer – Amazon distribution networks – runs counter to the trend in manufacturing, as food goes for a 1:1 production line versus just-in-time for manufacturing. Upstream of home delivery – variety of groceries in each order, customizable production lines, next-day delivery, sale items. Automation and driver shortage; loading/unloading; load checking – areas for efficiency; Blockchain – tracking supply chain for individual items from producer to consumer.

T5: Artificial intelligence: automation through truck platooning and automated connected vehicles will greatly change logistics; Hyperloop-type infrastructures modified to move goods rather than people. Packaged meals: e-commerce meal deliveries to homes are becoming increasingly common and are temperature-sensitive; societal demand for year-round availability of food is increasing. Warehousing demands: the Amazon model of e-commerce food delivery will require massive food warehouses in order to deliver food straight to homes; market will grow exponentially. Organic food is gaining popularity and market share, adding complications. Automation could help solve driver shortages. Changes in containers and refrigerants: what technological breakthroughs are possible? Smart monitoring technology such as push notifications to phones is smarter, helps prevent loss.

T6: Increased demand for fresh products, dining habits, delivered groceries (meal kits; shipping out of cold storage warehouses), traceability (RFID on pallets, temperature), connected/automated vehicles (CAV) and truck platooning (more efficient operations with less labor).

T7: AI (artificial intelligence) – more advanced data/analytics for tracing and tracking shipments, with information available in real time. Sustainability – increased knowledge of the energy intensity of products. Autonomous vehicles. E-commerce. Restaurant deliveries (Grubhub).

T8: Societal: local/farm-to-table consumption. Speedy delivery (next/same day). Population changes. Urbanization. Sustainability (“green” consumers, emissions reduction/elimination). Technology: Automation, tracking (GPS) to ensure chain of custody, mass customization, Artificial Intelligence, Internet of Things, cyber security.

Q3: How will the anticipated societal or technological changes (identified in Question 2) influence existing cold chain operations in Wisconsin?

T1: Alternative packaging will affect shipping weights.

T2: Any technology adopted will need to be both profitable and safe. AI and machine learning is already being applied at an automated bakery. Improved efficiencies are driven by consumers. A career-ready workforce is needed: young people should see career options in cold chain. Farms will continue to get larger. Energy costs will affect both cold storage and transportation.

T3: Capital investment for logistics and efficiency. Technologies applied to compliance with federal and state regulations and to infrastructure. Do either state or U.S. DOTs get approached by companies with new technology? How or who checks if these integrate with regulations? Can governments coordinate technologies to connect to all aspects of society? (Answer) Private sector should drive changes, but DOT can coordinate, promote, or provide awareness of possible technological shifts. DOT marketing can be key in ensuring different generations are aware of the opportunity to adopt new technology. (Monitor and address) route changes due to changes in markets or new investments (sand, electric vehicles, solar, other markets). Ideas: Epic uses “reverse pitch,” where they ask for external perspectives to develop solutions to Epic problems. Suggest giving “winners” a financial reward as an ‘angel investor’ for new ideas that get implemented. Work with Wisconsin Economic Development Corporation (WEDC) as a technology advisor to new grant awards. Train GenX and Baby Boomers in technological advances. Route changes – vehicles, storage, productivity changes.

T4: Diesel-powered refrigeration – Governor’s declaration for emissions-free in 2050. How? Reefers and trucks – decoupling diesel from cold supply chain transportation and refrigeration. Also – fuel security/alternative fuels. Life cycle of equipment - depreciation of reefers; potential to swap diesel-powered refrigeration for alternative fuels through retrofits for equipment. Older equipment may be cheaper to replace than retrofit. Need infrastructure to support alternative fuels - use speed [management] – recharging versus refueling. Decentralization of utilities and manufacturing; power sector engagement needed. Huge future need for intermodal – without intermodal, truck traffic out of the state is “silly.” Especially important for bulk agriculture. Keep trucks in the state rather than running in and out. Service/access – miles per container.

T5: Societal: Overall, there will be a need for greater cold storage capacity to serve e-commerce market. There will be a shift away from mega-cold storage facilities to smaller regional facilities that are more specialized and can more effectively respond to market demand. Technological: Vehicle Automation will help mitigate the driver shortage. EPA regulations that affect electric rates will significantly affect cold storage. Internet of Things (IoT – computers talking to computers) will also affect cold storage.

T6: Companies that can attract and retain talent will be most successful. Consumers are asking for companies to be charitable – corporate and environmental responsibility. Automation: increased reliance on technology and the need for network security. Example: robotic milking parlors vs. hiring more labor to milk. “Buy local, eat local” philosophy.

T7: Need to shift to artificial intelligence big data usage. Autonomous vehicles and platooning. More retail operations will focus on supply chain changes – going from producer directly to customer (factory direct). Retail will also seek more sustainable (Earth-friendly) delivery. Market-driven versus regulation-driven systems – carbon footprint as an example. More cold storage facilities will move closer to population centers. Products will be packed and distributed in smaller quantities.

T8: Societal: bring cold chain closer to production points, people paying more for local products. More storage facilities – larger-scale (regional) and smaller-scale (local). Smaller farm operations – lower barriers to entry. Supply/demand movement – milk prices/dairy cow prices move together – consolidation of dairy facilities. Sustainability through reduced travel times/distances, marketable practices/policies, corporate social responsibility. Technological: labor force is becoming more technical. Supply chain efficiencies, including fewer deadhead miles.

Q4: What is the public sector’s role in supporting the cold chain?

- *Transportation systems*

T1: More and better roads. Reduce congestion with more capacity. Intermodal facilitation – funding/grants. Consistency with regulations – simplify, don’t add more, study before implementation.

T2: Regulate, but back away from over-regulation. Reduce local truck parking/zoning regulations and restrictions. Convert brownfields to truck parking areas with lighted parking and toilets. Truck parking safety is an issue everywhere. Support parking information systems.

T3: Provide a structure that brings together problems and problem-solvers – with financial contributions (WEDC?). Monitor best practices from around the world. Make connections across state and local agencies for new technology and best practices. Focus infrastructure

investment for new modes of transportation – intermodal systems; connected vehicles. Listen to the private sector.

T4: Demand safe goods/products and transportation, ensure safe and reliable infrastructure (highways and rail), provide connections to modes, ensure resilient infrastructure – keep Wisconsin competitive/make more competitive; consider Tomah for intermodal center. Plan infrastructure priorities. Invest in freight rail – railroad system disjointed because of ownership. Seek harmonization of all railroad segments.

T5: Infrastructure improvements. Ensure safety: perhaps this could be made more efficient by using pre-qualification or a risk-based process where some firms could self-regulate while higher-risk, smaller firms maybe need more audits. This could be built into random audits. For instance, Kwik Trip needs less oversight because of their scale and internal safety standards. Avoid over-regulation: ensure regulations are reasonable (for example, the Food Safety Modernization Act [FSMA]) – regulations are needed to ensure safety, but they shouldn't hinder trade. Many elements of FSMA were already in-use at larger companies. Coordination of public sector and private sector interests (intermodal, education/training). Coordination for intermodal transportation between rail and truck. Permitting. Support and fund a good highway system to move goods efficiently. Provide high-speed Internet statewide. Set standards for certification and education for regulation. Inspections: DATCP is providing inspections for warehouses – this often takes an entire day. Provide quick and efficient inspections so product is not delayed.

T6: Road networks, especially first- and last-mile. An intermodal facility located in the southeastern part of the state. CAV infrastructure.

T7: Number one priority: maintain the infrastructure – local bridges of high importance. Responsibility for agencies to promote alternative fuels across modes, transportation facilities. Consider revising federal prohibitions for Interstate refueling and recharging facilities to allow plug-ins at parking facilities for refrigerated containers (public vs. private operations) - current federal regulations prohibit such activities. Harmonize truck size and weight regulations, hours-of-service regulations. Workforce training to maintain regulatory compliance.

T8: Infrastructure, messaging, incentives, cooperative environment (law enforcement, weight limits with smart regulation), engage all stakeholders.

- *Other systems*

T3: Provide structure to bring together problem solvers with problems – examples: have other state agencies use FAC-type model; coordinate multiple state agencies together on specific problems (i.e., Transform Milwaukee, DNR Quick Response Economic Development Team). DOT could monitor best practices and advise private sector (FAC example). Provide grant funding for new/different modes and infrastructure for autonomous/EV reefer charging. Listen to private sector.

T6: Utilities – electricity. Better rural area coverage and connectivity for the Internet.

T7: Regulation impacts on work force – training audits. Ask if Food Safety Modernization Act is really adding value (Kwik Trip).

Q5: What are the most important contributions/investments that should be expected from the private sector?

- *Fixed assets*

T1: Meeting business demands, public/private partnerships, intermodal facilities.

T2: LEED-certified buildings, MAYBE use electric vehicles in certain applications (last mile deliveries), possibly use drones, use alternative fuels if/where cost-effective.

T3: Intermodal investment, allow/provide for flexibility in supply chain. Need to find a way to share data in a confidential manner to DOT.

T4: Research, development, and innovation. Collaboration with companies – not sharing trade secrets but addressing common supply chain/shipping problems; competitors setting aside competition for win-wins. Mutually-beneficial collaboration. Rail doesn't "play" with other modes and intermodal network – not sure how to solve it. Potential to influence rates through shipping choices and cooperation – Kansas City, MO Smart Board as example.

T5: The private sector could partner with the public on 3Ps to bring more match money to public funds, especially with multimodal ports and harbors. Increase the share of private money in improvements. Rail terminal investments. Locating warehouse/distribution facilities close to customer demand – regionally and nationally.

T6: Increase load limits with a corresponding increase in fees; improve locks and dams; comprehensive review of all transportation modes; reduce water weight from manure.

T7: Market will drive improvements such as more cold storage warehousing being built (bulk storage vs. ready-to-ship products). Truck parking availability. Automated OSOW permit system.

T8: Convoy – efficiency. Updating/maintaining equipment.

- *Mobile assets/systems*

T2: Collaboration on workforce issues. Engagement between public and private sector. Join advocacy organizations.

T5: Technology improvements and implementation – the private sector will drive the implementation of new technology. Improve efficiency in refrigeration as new technology becomes available. Refrigerated equipment manufacturers could increase their vehicle production capability. Due to the recession, many manufacturers cut back on production, and that production never came back up. The private sector adapts to profit.

T7: Automated permit issuance. Harmonized weight laws across borders.

T8: Training: in-depth, workforce development. Flexibility. Public/private collaboration.

Tabletop Discussions – Maritime

Q1: What are the key functions at Wisconsin ports and waterways that impact:

- *Businesses and/or the state's economy on the Great Lakes?*
- *Businesses and/or the state's economy on the Inland Rivers?*

T2: GL: Grain - outbound (Superior, Milwaukee), misc. bulk cargoes (must be integrated with other modes), manufactured goods, coal/energy products, cement, salt, tourism. IR: Fertilizer – inbound, bulk cargoes, manufacturing, energy products, cement, salt.

T3: (skipped)

T4: GL: Low-cost movement of bulk commodities (incl. cement, coal, agriculture), key infrastructure – energy and raw materials. IR: Grains, equipment

T5: State's economy: Take advantage of value capture. Can help or harm property values if it brings in other supporting industries and businesses. Ports raise tax revenues for locality. Move freight in a safer way with less environmental impact when compared with rail/road – helps remove truck burden on highways. Also provides greater transportation choices and cost savings. Bringing in salt for winter road maintenance. Moving other large volume / low value bulk commodities to market.

T6: Both: Bulk products (grains, minerals, commodities), heavy machinery (Great Lakes)

T7: Both: Jobs, economic development, ability to move large items, potential tourism, opportunities for environmental mitigation, shipping options, global access, rate advantages.

Q2: What are the strengths of and opportunities for the state's ports and waterways on:

- *The Great Lakes?*
- *Inland Rivers?*

T2: Access to both Great Lakes/St. Lawrence Seaway and Mississippi River (both), access to Canada, ship-building (esp. military vessels in Marinette and Sturgeon Bay), ship repair (Sturgeon Bay and Superior), capacity to grow (especially Great Lakes).

T3: Tourism, re-use of dredge material, economy of scale, resiliency, room for growth; lower costs (both waterways)

T4: Connectivity, significant volume – fuel efficient, cost-effective to operate, safe, intermodal.

T5: Lower environmental impact, safety (reducing trucks off roads), efficiency, cost savings, increased land value with increased port usage (value capture), increased available capacity opportunities, competitive pricing for agricultural products - lower costs for movement to market. Allows for intermodal freight transportation opportunities.

T6: Location/proximity to ports, economies of carrying via water, foreign trade zones, utilization of port facilities for business attraction, tourism.

T7: Both: Cheap rates to haul goods, global connections, potential opportunity for intermodal transportation at ports, potential for tourism business.

Q3: What are the weaknesses of and threats to the state's ports and waterways on:

- *The Great Lakes?*
- *Inland Rivers?*

T2: Too far north (freezing), water level fluctuation, dredging requirements, aging infrastructure (Poe Lock at SSM; Upper MS River Lock and Dam System), invasive species (salties – ballast water/cleaning issues; Asian Carp on inland rivers).

T3: Lack of leadership unified vision for regional coordination/planning (not just Wisconsin), lack of funding for harbor development and planning, drought years, weather dependency.

T4: Aging infrastructure (rail, docks, highway access), environmental (water levels), seasonality.

T5: Regulatory overreach; specifically, pilotage requirements/fees for foreign vessels – incredibly high costs: taxation at each port, reliability, seasonality, slow operation speed, aging infrastructure.

T6: Aging infrastructure and needed investments, climate change/flooding.

T7: Both: Seasonal use (winter shut-downs), lock size, variable water levels, aging/decayed infrastructure, possible lack of room for terminal facility expansion, no container terminals on the Great Lakes.

Q4: What role should governments (state, federal, and local) play with respect to addressing concerns and developing opportunities for waterborne freight on:

- *The Great Lakes?*
- *Inland Rivers?*

T2: Sharing resources when multiple parties benefit and the costs are high (especially for infrastructure), Public Trust Doctrine, infrastructure construction (issues when public-private partnerships have foreign subcontracts), land use oversight (keep access to ports; ensure freight vessels aren't displaced by recreational users), research and development.

T3: Several good studies but need coordination between studies and plans (currently they are not connected) - bring together with action items (esp. inland waterways), improve last-mile connecting infrastructure, more international coordination on Great Lakes, consistent regulations within the bounds of existing technology (help industry comply and work with different state rules).

T4: State: Infrastructure (funding; support maintenance and improvements), develop programs (provide incentives for water freight), coordination among all entities, act as a catalyst, Council of Great Lakes and St. Lawrence Seaway Governors and Premiers, protect the waterways as a resource. Federal: Infrastructure (funding). Local: Infrastructure, attract cruise tourism business, manage land use, avoid tariffs, manage land use to minimize gentrification.

T5: Federal: address taxation issues, pilotage fees/rules, Harbor Maintenance Tax, manage/control invasive species, build a new Soo Lock that can accommodate lake freighters, general infrastructure

investment in locks and dams. States: Need to play a bigger/more active role at ports and as advocates for the use of freight transportation by water, as the Federal government currently has a very large role.

T6: Great Lakes: Public-private partnerships with leadership from state and trade associations, infrastructure development, business development; intermodal facility (example of infrastructure development); locks and dams (federal role); port ownership/asset management (local government). Inland rivers: State role: public-private partnerships with leadership from state and trade associations, business development, an intermodal facility. Federal role: locks and dams. Local role: port assets/ownership.

T7: State role: provide access and matching to federal funds, find ways to streamline NEPA permitting for timely project delivery, do more to educate locals on benefits of maritime freight - public education process that explains the benefits from infrastructure improvements. Federal role: bigger locks on St. Lawrence Seaway, ice breakers, technical guidance and financial assistance for environmental mitigation at the ports. Local role: planning for future infrastructure, leadership – intermodal expansion success needs education for NIMBYs (state/local role).

Q5: Identify the expectations/roles from the private sector in making improvements to waterway assets and waterborne freight competition/options. What improvements can be expected, and what are the barriers faced in making those improvements for:

- *The Great Lakes?*
- *Inland Rivers?*

T2: Participate in planning efforts – cooperate regionally, invest in innovation, invest in infrastructure.

T3: Find ways to co-exist with recreational and multi-purpose uses; equipment investments – tugs with newer diesel-electric engines for efficiency and cleaner operations; coordinate with government on impacts to infrastructure from changes in climate; workforce of baby-boomers is aging out – need to do more with less.

T4: Expectations: Innovations that produce cleaner fueled ships (clean and healthy system), environmental protection, security, do a better job with marketing, barge cleanout services, ship cleanout services. Barriers: Cost, market insecurity, competition from other modes, government regulation.

T5: The private sector needs to upgrade their fleet. Many ships are approaching the end of their 100-year lifespan. Ships should also be repowered to diesel from bunker fuel. The conversion/repowering and new builds will incorporate more fuel-efficient and environmentally-sound power systems. There needs to be training for next generation of merchant marine workers, as well as investment in/ installation of ballast water treatment systems (cleaning, flushing) for invasive species management.

T6: Both systems: Expectations/roles: public-private partnerships, broader engagement from the private sector. Barriers: education on the value of maritime freight operations and the use of public funding for waterborne infrastructure.

T7: Provide infrastructure to quickly load and unload freight at ports; public trust doctrine limits development but protects land for maritime commerce – might need to be reviewed. Discussion – whether or not we are truly a global market and if that is what should be our focus