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Iowa Propane Supply Chain Optimization Analysis Update

Midwest Governors Association

October 2014

Propane Supply Chain Optimization Approach

- Iowa is taking a scientific approach to the propane crisis
  - Understand root causes underlying shortage and sharp price increases
  - Proactively analyze risks and opportunities to better manage in future
- Propane supply chain optimization analysis focuses on:
  - Ability to handle current demand with current infrastructure
  - Ability to handle future increases in demand with current infrastructure
  - Impact of changing and/or new infrastructure constraints
- Emphasis of the project is on “planning”
  - Create an efficient propane supply chain for the State of Iowa
  - Prioritize infrastructure investments to lower supply chain costs
- Identifies thresholds for when changes in demand or constraints limit ability to meet propane demand at reasonable price

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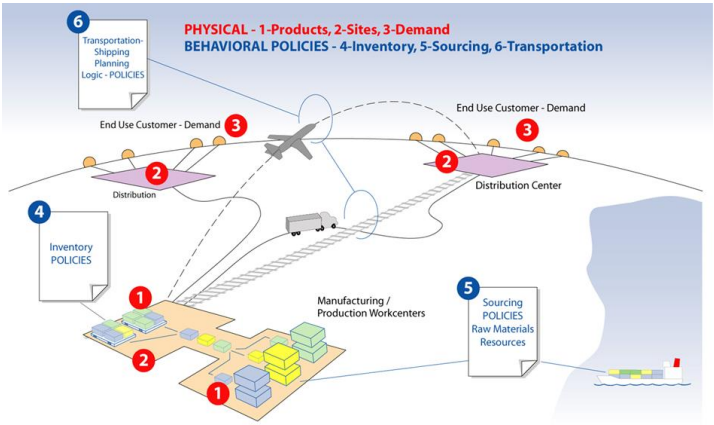
Building the Model
Data Collection

- Approach leverages commercial best practices for supply chain optimization
- Initial emphasis was on collecting data for quantitative analysis
  - Demand by sector: historical vs. future
  - Sites and storage capacity: end users, marketers, hubs, terminals
  - Product/pricing data by source
  - Transportation costs and capacity
- Sourced via combination of primary and secondary research
  - Public data sources including EIA, OPIS, API, industry directories
  - Interviews and surveys with Industry SMEs, associations and partners

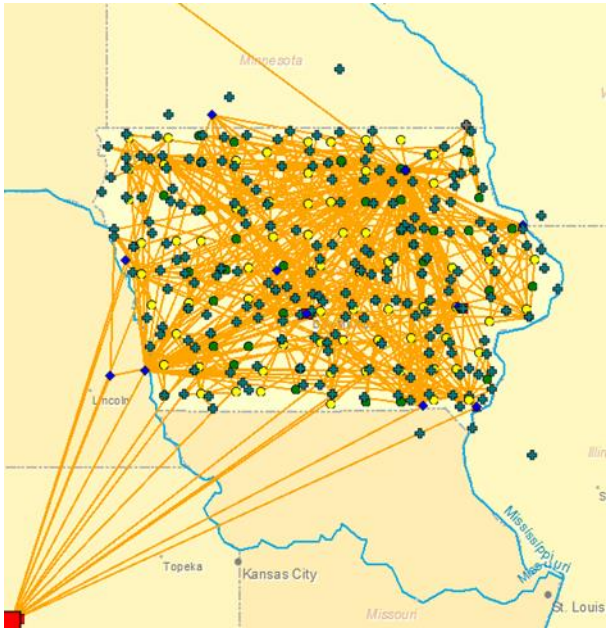


Building the Model
Defining Policies

- Next step was to translate industry practices into policies within the model
  - Sourcing: Where do participants source propane; Single vs. multiple sources; Pricing and contracting practices?
  - Inventory: What storage is available; What level of inventory is maintained; When is it reviewed, reordered?
  - Transportation: What modes are used to move product from different origins to destinations; What is asset capacity and availability; Costs?
- Goal to reflect current practices within baseline model
- Ongoing process to validate with industry experts

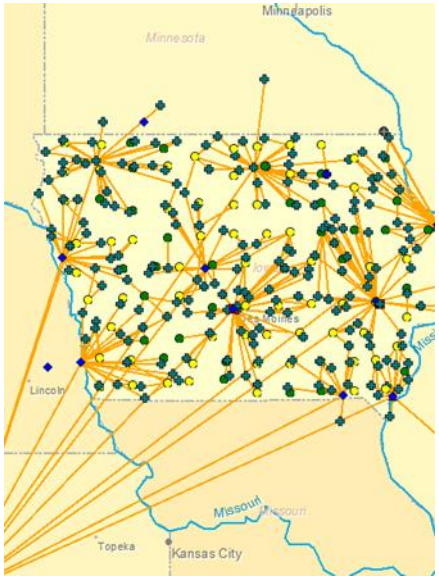
Analyzing Scenarios
Demand

- Efforts now centered on what-if analysis
  - Ability to handle current and future demand
  - Changes in infrastructure and practices
- Starts with baseline model of historical demand and infrastructure
- Then model ability to handle peak demand without Cochin in 2014
- Add in existing, alternative sources outside “normal” supply points
  - Optimal supply chain in post-Cochin era
- Analyze impact of increasing demand
- Goal to help State of Iowa understand:
  - Demand thresholds that present risks
  - Proactively vet alternatives to best handle fluctuations



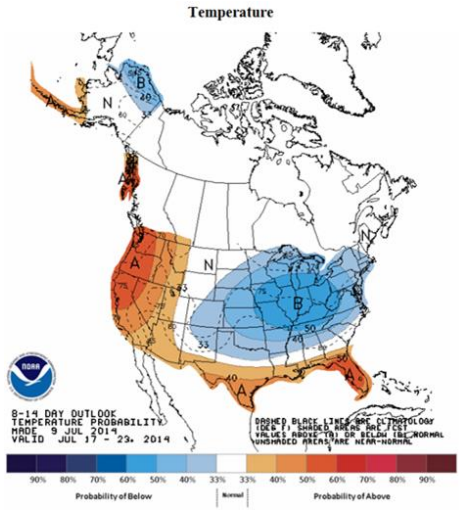
Analyzing Scenarios
Infrastructure, Policies and Practices

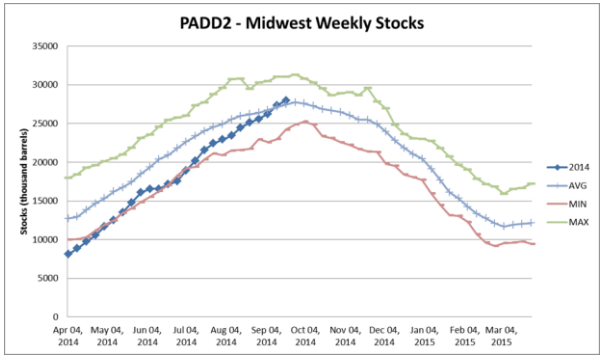
- Analyze impact of new infrastructure, behavioral changes or best practices on ability to serve demand
  - Increase in export capacity and/or demand outside IA
  - Investment in storage in IA
  - Building inventory in summer
  - Change in ordering and inventory management
  - Adequacy of truck/rail capacity
  - Reduction in pipeline capacity or outage
  - Investments in new terminals or sites
- Goal to understand what draft recommendations will have most impact and prioritize State efforts, e.g.
  - Tax credits for summer build, increased storage
  - Development of new primary storage sites in Iowa
  - Reporting requirements linked to tax credits/incentives to increase visibility
  - Providing truckers with terminal wait times



What's Happens After the Analysis?

- Focus shifts to execution and market monitoring
  - When face high risk of future shortage / emergency
  - When enact action plan based on reaching threshold
- (1) Short-Term Monitoring
  - Short-term demand factors (e.g. weather, grain moisture, harvest) and inventory levels
  - Collect data and convert to actionable analytics
  - Define contingency plan and triggers for action
  - Systemic monitoring for timely, effective response
- (2) Long-Term Monitoring
  - Long-term changes in demand and constraints (e.g. export capacity, rail capacity, storage investments)
  - Track changes in infrastructure and constraints
  - Periodically re-baseline analysis to determine changes in thresholds for action





Questions

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