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**Multimodal Transport and TransLoad Facilities in Arkansas
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1. Project Description

[National Priorities](#) consist of “building a clean and efficient 21st century transportation sector,” and Multimodal Transportation is one of five [Transportation System Efficiency](#) strategies at the US Department of Energy. Six locomotives could replace approximately 1000 large semi tractor-trailers, and cut carbon monoxide emissions in half, according to the [National Waterways Foundation](#). However, additional Multimodal Transport may require added TransLoad Facilities where freight is moved from truck to railcar or vice versa.

Greater than 550 short line and regional railroads operating in 49 states account for almost 30% of the US rail network ([American Short Line and Regional Railroad Association](#)). These small businesses compete and cooperate with trucking interests to cost-efficiently connect local economies with the larger Class I railroad system. With three Class I railroads and 24 short lines in Arkansas it may be poised to ease State highway congestion, safeguard the environment, and support local economies by adding TransLoad Facilities.

Technically, intermodal transport refers to multimodal transportation of containerized goods, but intermodal and multimodal seem interchangeable in practice. State of Arkansas provisions for regional intermodal facilities include [Act 690](#) of 1997, “providing for cooperative establishment of regional intermodal facilities and regional intermodal facility authorities by counties and municipalities,” and [Act 1430](#) of 2013, “to create a task force concerning intermodal transportation and commerce and related issues; and to create the intermodal transportation and commerce task force.”

Findings reported by the Legislative Task Force on Intermodal Transportation and Commerce December 2014 should stimulate research into Multimodal Transport and TransLoad Facilities in Arkansas. The task force related future economic development to efficient modal assets and infrastructure sufficient to take advantage of Panama Canal expansion. Other findings focused on the importance of community and regional resources for intermodal transportation development.

This should motivate continued work on disseminating information about TransLoad Facilities. The primary recommendation was to more fully explore establishment of a true Department of Transportation which combines aeronautics, highways, rail, waterways and ports. Future work on rail planning should be integrated with Arkansas Highway and Transportation Department [Intermodal Transportation Planning](#) and [Arkansas Waterways Commission](#) policy.

Goals and objectives of this project are organized into the following sections required by MarTREC. General information about design development, or TransLoad Facility and Service Feasibility is under section 2. Methodological Approach. For Railroads in Arkansas regarding Class I versus short line and regional, connections and ownership, and Some TransLoad Facilities in Arkansas described with respect to service characteristics and locations see section 3. Results / Findings. Section 4. Impacts / Benefits of Implementation (actual, not anticipated) are not applicable. Further Comments on future work conclude the report in section 5. Recommendations and Conclusions.

2. Methodological Approach

TransLoad Facility and Service Feasibility

[HR Green](#) gives criteria for TransLoad Facility design, marketing, and operational success which requires the combination of rail, trucking, and warehousing. Trucking and warehousing have efficiently merged material handling and information systems, but integrating these with rail operations is relatively challenging to the TransLoad Operator. There is a close relationship between facility design and operational efficiency required to offset additional cost versus direct shipment. Additional details were gleaned from the [BNSF TransLoad Facility Questionnaire](#) and Washington State Department of Transportation [Geiger Spur Transload Facility Study](#) resourced by the [BNSF Design Guidelines for Industrial Track Projects](#).

Commodity Characteristics

Commodities may be grouped into four categories (examples) which are difficult to mix in a single transload: Bulk (plastics, chemicals, minerals, agriculture products); Dimensional (lumber, panel, structural steel); Equipment (earthwork machinery); Warehouse (paper, consumer, food, beverage).

Consider finished paper rolls handled with a 5000 – 10,000 lb. capacity forklift, steel I-beams requiring a 20,000 lb. capacity forklift with spreader attachment, and dirt on the I-beams which could contaminate the paper. An example TransLoad Facility would require a clean warehouse to store paper, separate from an area for unloading I-beams, and multiple tracks. I-beams would be offloaded outside with a forklift on pavement extending to railcars, while paper is offloaded from a warehouse floor level with boxcars.

Commodities may also be incompatible within category. Consider baking flour which requires a very clean facility and a pneumatic offloading system mounted on a truck, and asphalt which has a strong odor and requires a gravity offloading system. The presence of hazardous material may prevent food companies from transloading.

Railcar Types

Different commodities travel in different railcar types for reasons including ease of loading and unloading, environmental protection, product containment and securement. Bulk commodities generally move in hoppers or tank cars.

Dimensional commodities move in flatcars, gondola cars or boxcars. Equipment and warehouse commodities are associated with flat cars and boxcars, respectively.

Handling and Storage

Commodity categories come with general storage situations. If feasible, store bulk commodities at the unloading site in railcars, until offloading into truck. Some bulk commodities are offloaded into storage tanks, or ground stockpiles which are

moved into trucks with front loaders. Dimensional and equipment commodities are normally stockpiled outside, or inside if weather sensitive. Warehouse commodities may require climate control which would factor into distance between loading and unloading. In general consider storage sheds versus open storage locations, and surfacing requirements: choice of pavement type, traffic volume and flow patterns, weight requirements, aisle and track layout, loading and unloading platforms.

Material Handling Equipment

TransLoad Operators use standard equipment types. For bulk they include self-contained trucks and conveyor belts. Dimensional and equipment commodities typically require 20,000 – 60,000 lb. capacity forklifts, and moveable gantries supporting cranes. Equipment is preferably driven onto a railcar via end loading dock but may – like bulk and dimensional commodities – require only track level access to railcars. Warehouse commodities typically require 5000 – 20,000 lb. capacity forklifts and dock high access to railcars.

Rail and Facility Configuration

Each combination of commodity and railcar may benefit from a different configuration. Bulk and warehouse commodities need just one truck access lane, while dimensional commodities and equipment typically require track access from both sides. Track spacing can be 14 ft for bulk, 30 – 60 ft for dimensional and equipment. For bulk, dimensional and equipment asphalt paving between tracks is preferred. Warehouse track runs to either an inside location or alongside facility. General features to consider in more detail here include pavement, electricity and telecommunications, site lighting, sewer and water lines.

For example consider layout requirements for a typical facility handling dimensional commodities. Ideal capacity is one train, 100 car spots on two tracks. Typical car length is 60 ft, and ideal railcar storage to working track ratio is 3 to 2. Spacing is 15 ft between storage tracks, 30 ft between non-dimensional transload tracks, and 100 – 200 ft between dimensional transload tracks. Roadway aisles are

50 ft wide. Truck parking stalls are 55 ft by 10 ft angled, or 55 ft by 11 ft perpendicular. An administration building is located near combined inbound / outbound gate. Egress / ingress is designed for most restrictive truck turning movements, and counterclockwise internal truck circulation is preferred for parking.

Railcar Volumes

TransLoad Facility volumes are a function of commodities handled, storage space, service provided, and system efficiency. Bulk railcar volume considered storage in transit is difficult to predict and may remain in facility for up to three months. Normal industry practice supports charging storage for such extended stays. Volume is 5 – 10 cars per day for many dimensional and equipment TransLoad Facilities, up to five cars per day for warehouse facilities. Most cars remain in dimensional, equipment and warehouse facilities for less than 48 hours.

Additional Considerations

These are some additional amenities which may be present at facilities, depending on commodities transloaded, customer requirements, operations and regulations: administrative offices, bulk storage tanks, controlled gate access and other security, equipment maintenance and storage, extended truck and trailer parking, hazardous material containment, heating plant, railcar and tank truck interior wash, room for snow removal, storm water containment, truck weigh scale.

3. Results / Findings

Railroads in Arkansas

In addition to 24 short lines, three of America's seven Class I railroads operate in Arkansas: BNSF Railway (BNSF, Fort Worth TX), Kansas City Southern Lines (KCS, Kansas City MO), and Union Pacific (UP, Omaha NE). Table 1 shows connections between Class I and short line railroads in Arkansas.

Table 1. Connections between Class I and short lines in Arkansas

BNSF	KCS	UP
AKMD, AM, AOK, CSR, DQE, DVS, KRR, LRPA, LRWN	AKMD, ALM, AM, AOK, ARS, DQE, DSRR, EACH, FSR, KRR, LNW, MNA, NLA	AKMD, ALM, AM, AOK, BXN, CSR, DQE, DR, EACH, EDW, FP, FSR, LNW, TRPA, LRWN, MNA, NLA, OUCH, PNW, WSR

January 2015 Genesee & Wyoming (G&W, Darien CT) acquired Arkansas Midland Railroad (AKMD, Malvern AR) – which operates Prescott & Northwestern Railroad (PNW) and Warren & Saline River Railroad Co. (WSR) – for \$40 million in cash, from Pinsley Railroad Company (Westfield, MA). These three railroads add to six previously owned by G&W: Arkansas, Louisiana & Mississippi Railroad (ALM, Southlake TX); Bauxite & Northern Railway (BXN, Bryant AR); Fordyce & Princeton Railroad (FP, Southlake TX); Kiamichi Railroad (KRR, Hugo OK); Little Rock & Western Railway (LRWN, Southlake TX); Missouri & Northern Arkansas Railroad (MNA, Carthage MO).

Patriot Rail (Jacksonville, FL) owns DeQueen & Eastern Railroad (DQE, DeQueen AR) and Louisiana & North West Railroad (LNW, Home LA). Pioneer Railcorp (Peoria, IL) owns Fort Smith Railroad (FSR, Fort Smith AR), and Watco Companies (Pittsburg, KS) owns Arkansas Southern Railroad (ARS, Nashville AR).

Highland Industrial Park owns East Camden & Highland (EACH, Camden AR), and the following are owned by Arkansas Shortline Railroads: Camden & Southern Railroad (CSR, Russellville AR), Dardanelle & Russellville Railroad Co. (DR, Russellville AR), North Louisiana & Arkansas Railroad (NLA, Russellville AR), Ouachita Railroad Co. (OUCH, El Dorado AR).

The remaining six are independent: Arkansas & Missouri Railroad (AM, Springdale AR), Arkansas-Oklahoma Railroad (AOK, Wilburton OK), Delta Southern (DSRR, Tallulah LA), Delta Valley & Southern Railway Co. (DVS, Wilson AR), El Dorado & Wesson Railway (EDW, El Dorado AR), Little Rock Port Authority (LRPA, Little Rock AR).

Arkansas Highway and Transportation Department is the rail planning agency for Arkansas and prepared its first [State Rail Plan](#) in 1979. Updates followed in 1984 and 2002, and another update is expected to be final by February 2015.

Some TransLoad Facilities in Arkansas

Kansas City Southern has 54 TransLoad Centers in the US but none in Arkansas.

Union Pacific has 24 intermodal facilities including one approximately 8 miles northwest of West Memphis, in Marion, AR. [Marion Railport Industrial Park](#) is made up of 2100 acres near the intersection of I-40 and I-55, and supports three outbound and four inbound trains daily between Marion and West Coast seaports. “A review of public and private intermodal railroad development in the Memphis region ([Pallme, et al.](#))” uses a case study of this facility to address how groups have developed and promoted intermodal connections.

Arkansas & Missouri Railroad (AM) provides through [Ozark Transmodal](#) (OTI) rail-to-truck and truck-to-rail services in Fort Smith and Springdale AR which handles different types of steel coils, food-grade commodities, lumber and construction materials with more than 16,000 ft² of indoor storage. AM's old web pages also mentioned a sand transfer station in Gateway, AR which is approximately 20 miles northeast of Pea Ridge, AR.

BNSF has none of its own 28 Intermodal Facilities in Arkansas, but BNSF Premier Transloader Search has more info about OTI in Fort Smith, and Mid-South Bulk Services in West Memphis, two out of 138 [BNSF Premier Transload Facilities](#) in the US, Mexico and Canada.

OTI in Fort Smith has six tracks, 115 railcar spots, and five modes of storage: 800 ft² covered; 100,000 ft² enclosed; 653,400 ft² fenced; 87,120 ft² uncovered and paved; 217,800 ft² uncovered and unpaved. Facility types include but are not limited to Dry Bulk, Liquid Bulk, Machinery, and Pipe TransLoad. The facility has a wet sprinkler system for safety, and the following equipment: air compressor, auger, back hoe, bale clamp, C hook, car puller, containment pans, conveyor, crane, end ramp, excavator, lift, pallet jacks, a portable ramp, roll clamp.

Mid-South Bulk Services in West Memphis has four tracks, 75 railcar spots, and three modes of storage: 25,000 ft² enclosed; 174,240 ft² uncovered and paved; 261,360 ft² uncovered and unpaved. The facility has the following equipment: air compressor, auger, back hoe, belts, car puller, containment pans, conveyor, crane, elevators, front end loader, lift, pallet jacks, portable ramp, slip sheet, vacuum and pneumatic equipment.

Arkansas Midland Railroad (AKMD) has four TransLoad Locations in Arkansas: Jones Mills, McGehee, North Little Rock, and Prescott. The following details were collected from [Pinsley Railroad Company](#) web pages which no longer exist.

Jones Mills connects Union Pacific (UP) to AKMD approximately 11 miles north of its headquarters in Malvern, AR. Full and self-service capabilities near I-30 include 100,000 ft² of indoor warehousing and four acres of fenced, lit and paved outdoor storage. Jones Mill specializes in bulk commodities and lumber.

McGehee connects Union Pacific to AKMD approximately 27 miles west of Monticello, AR. Features near the Mississippi River include a 1500 ft TransLoad Track and place for 20 railcars to unload bulk materials. McGehee has potential for bulk chemical and petroleum unit train TransLoad Operations.

North Little Rock connects BNSF and UP to AKMD. Primarily self-service capabilities at the intersection of I-30 and I-40 include four warehouses from 9000 ft² to 66,500 ft². Other features include fenced and lit, scales for rail and truck, and track reserved for walk-in customers. North Little Rock specializes in bulk products such as liquid and fracking sand.

Prescott connects UP to AKMD approximately 18 miles northeast of Hope, AR. Self-service track near I-30 has three phase / 480V service. According to the new [Genesee & Wyoming](#) web page about AKMD it generally serves industries including aggregates, aluminum, carton board, energy, and food products.

4. Impacts / Benefits of Implementation (actual, not anticipated)

N/A

5. Recommendations and Conclusions

At the fall 2014 Mack-Blackwell Rural Transportation Center advisory board meeting I presented related research into economic impacts of lock usage and unavailability, and included slides to introduce Multimodal Transport and TransLoad Facilities in Arkansas.

I submitted a Research Problem Statement to extend this work to the Arkansas Highway and Transportation Department September 4, 2014 and presented at the Transportation Research Committee meeting November 13, 2014. Proposal objectives are to 1) formulate, solve and analyze mathematical models to intelligently locate new TransLoad Facilities in Arkansas, 2) leverage its short line and waterways resources, and 3) estimate the extent to which doing so would decrease transportation costs related to highway congestion and maintenance, emissions and energy-efficiency. The purpose of the research would be to broadly impact State highway and transportation infrastructure decisions with recommendations and support related to TransLoad Facilities and Transportation System Efficiency in Arkansas.

Another problem statement submitted January 21, 2015 to the University of Arkansas proposed to impact US infrastructure decisions and help short line railroads support local economies. Suggested funding agencies are the following; [Delta Regional Authority](#) published reports including Multimodal Transportation Assets, Needs, and Recommendations; Department of Energy strategies include Multimodal Transportation; Department of Transportation.

Finally I communicated about Multimodal Transport and TransLoad Facilities with Charles Laggan, vice president of Arkansas Midland Railroad at the time. He wanted to help collect information from Arkansas short line operators this year with a questionnaire I drafted, and if results merited, invite me to present them at a regular meeting of the operators.

This report was written to support the view additional TransLoad Facilities would help discover latent economic value of short line and regional railroads. The project motivated communication and proposals aimed at more extensive and detailed study of these topics in the future.

References

Most citations are hyperlinks to the following references.

Act 690

https://www.arkansashighways.com/planning_research/statewide_planning/Act690.pdf

Act 1430

<ftp://www.arkleg.state.ar.us/acts/2013/Public/ACT1430.pdf>

American Short Line and Regional Railroad Association

http://www.aslrra.org/about_aslrra/Connecting_America_s_Communities/

Arkansas Waterways Commission

<http://waterways.arkansas.gov/Pages/default.aspx>

BNSF Design Guidelines for Industrial Track Projects

<http://www.bnsf.com/customers/pdf/indytrkstds.pdf>

BNSF Premier Transload Facilities

<http://domino.bnsf.com/website/premtransloader.nsf/mapprlocations?open>

BNSF Transload Facility Questionnaire

<http://www.bnsf.com/customers/pdf/transload.pdf>

Delta Regional Authority

<http://dra.gov/about-dra/research-and-data/>

Genessee & Wyoming

http://www.gwrr.com/operations/railroads/north_america/arkansas-midland-railroad

HR Green

<http://www.hrgreen.com/Documents/Articles/HRG-TransloadEfficiencies.pdf>

Intermodal Transportation Planning

https://www.arkansashighways.com/planning_research/statewide_planning/intermodal.aspx

Marion Railport Industrial Park

http://www.marionarkansas.org/economic/eco005_railport.htm

National Priorities

<http://www.whitehouse.gov/sites/default/files/microsites/ostp/m-14-11.pdf>

National Waterways Foundation

<http://www.nationalwaterwaysfoundation.org/study/Work4America.pdf>

Ozark Transmodal

<http://www.amrailroad.com/index.php/freight/ozark-transmodal-inc>

Palme, Dan, Bruce Lambert, Chad Miller, and Martin Lipinski (in press), "A review of public and private intermodal railroad development in the Memphis region," *Research in Transportation Business & Management*.

Pinsley Railroad Company

<http://www.pinsly.com/>

State Rail Plan

https://www.arkansashighways.com/planning_research/statewide_planning/SRP_2002all.pdf

Transportation System Efficiency

http://www.afdc.energy.gov/conserve/system_efficiency.html