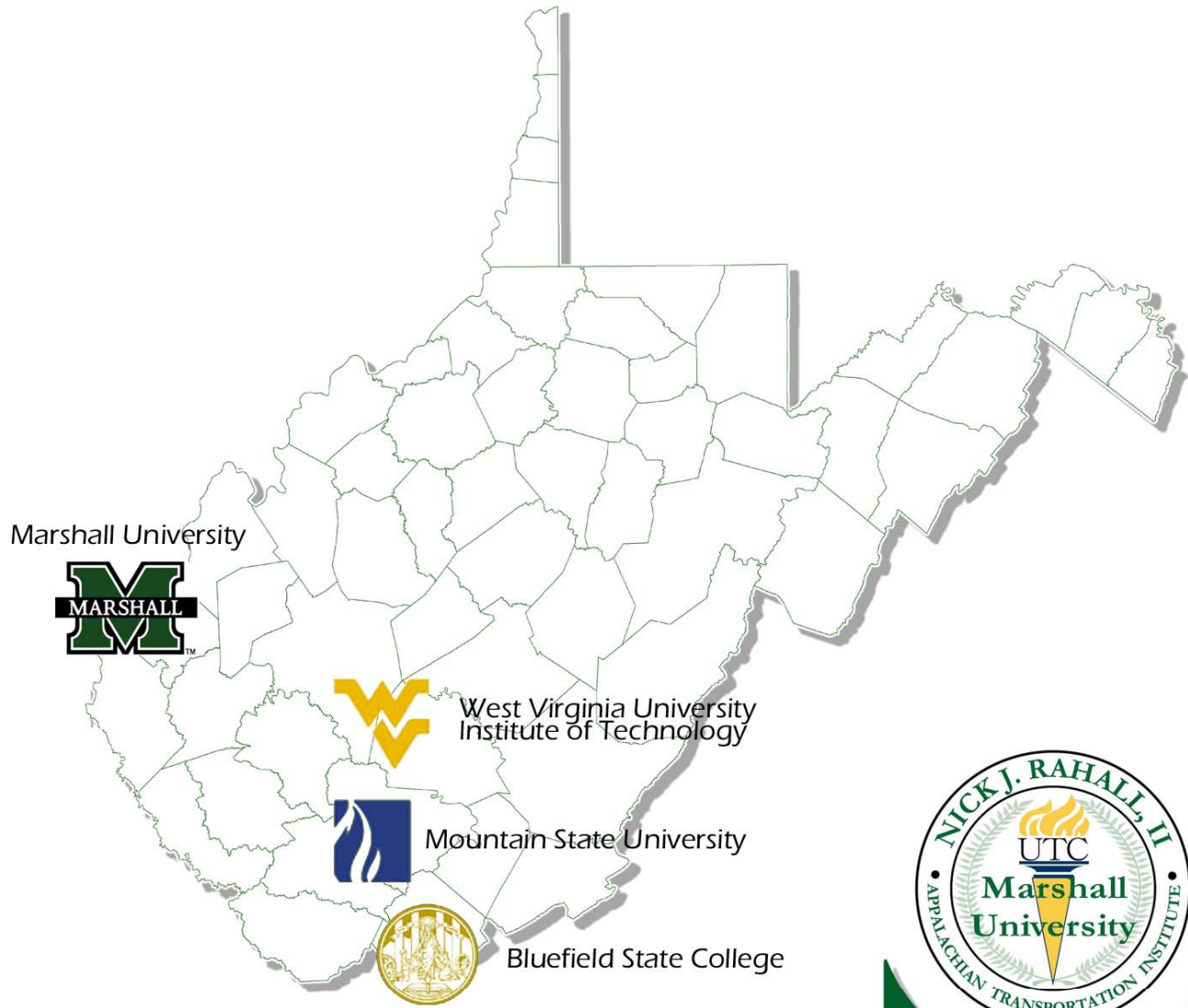


# RP 199 Improving the Competitive Position of Appalachia's Wood Product Producers through Enhanced Transportation Alternatives



- Marshall University
- West Virginia University  
Institute of Technology
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## *1. Introduction and Project Goals*

During 2005, more than 10,000 West Virginians were directly employed within the timber and wood products industry, earning wages that totaled more than \$266 million.<sup>1</sup> Both employment and wages within this sector indicate that it represents a relatively stable form of commerce within a State economy that tends to be cyclical.

This said, the past two decades have brought profound changes to the timber and wood products sector. Furniture manufacturing in the eastern US has declined significantly during this period, having been replaced with manufacturing activities in Asia.<sup>2</sup> Consequently, West Virginia's wood producers must look to international markets (as well as more distant domestic markets) as a source of product demand. This reality has, in turn, placed a new and heightened emphasis on the ability to transport lumber and wood products over greater distances with little or no sacrifice in reliability and only minimal increases in transportation costs.

With this end in mind, the current analysis considers various potential strategies to reduce the transportation costs of West Virginia's timber and wood products. The analysis begins with a statistical summary of timber and wood product commodity flows in Section 2. This is followed by an examination of specific, forward-looking strategies in Section 3. Finally, study findings are summarized in Section 4.

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<sup>1</sup> Source: West Virginia Bureau of Employment Programs.

<sup>2</sup> While Asian markets are growing rapidly, Canada remains the largest importer of US wood products.

## *2. Data and Industry Summary*

Figure 2.1 depicts wood products and forestry and logging firms in West Virginia. All told, there are over 700 producers located across the state. However, with a few notable exceptions most of these firms are relatively small in size. Indeed, the median number of employees is slightly less than ten. Nonetheless, it is clear that timber and wood product production is an important source of commerce in nearly every portion of the State.

Traditionally, West Virginia timber and wood products were consumed in the eastern US for use in wood-framed construction, the manufacture of paper products, and furniture production. These markets, while still viable, have diminished in importance relative to the overall domestic and international markets for timber and wood products. Increasingly, West Virginia producers need to effectively reach markets in the western US, Latin America, and Asia.

Table 2.1 summarizes the relative importance of timber and wood exports on a state-by-state basis, while table 2.2 depicts the five year trend in West Virginia timber and wood product exports. In terms of export share, West Virginia's timber and wood products (3.3% of total exports) rank second behind Maine in importance. Similarly, among timber and wood product exporting states, West Virginia's exports, as a share of total Gross State Product (GSP), rank third behind Mississippi and Maine. Clearly the State's producers are major participants in international markets and clearly these are industries that are a vital part of the West Virginia economy.

As noted, Canada continues to be West Virginia's number one recipient of timber and wood products, accounting for roughly 48 percent of the export total. However, the increase in Chinese consumption can only be described as breathtaking. In 1999 West Virginia exported approximately \$275,000 in wood products to China, or roughly 0.4 percent of the total for that year. By 2004, Chinese purchases had risen to nearly 13.4 million, or roughly 12 percent of total exports. Moreover, anecdotal information suggests that the trend in Chinese consumption continues unabated.

Figure 2.1 – West Virginia Production Locations

## Wood Product and Forestry & Logging Firms in West Virginia

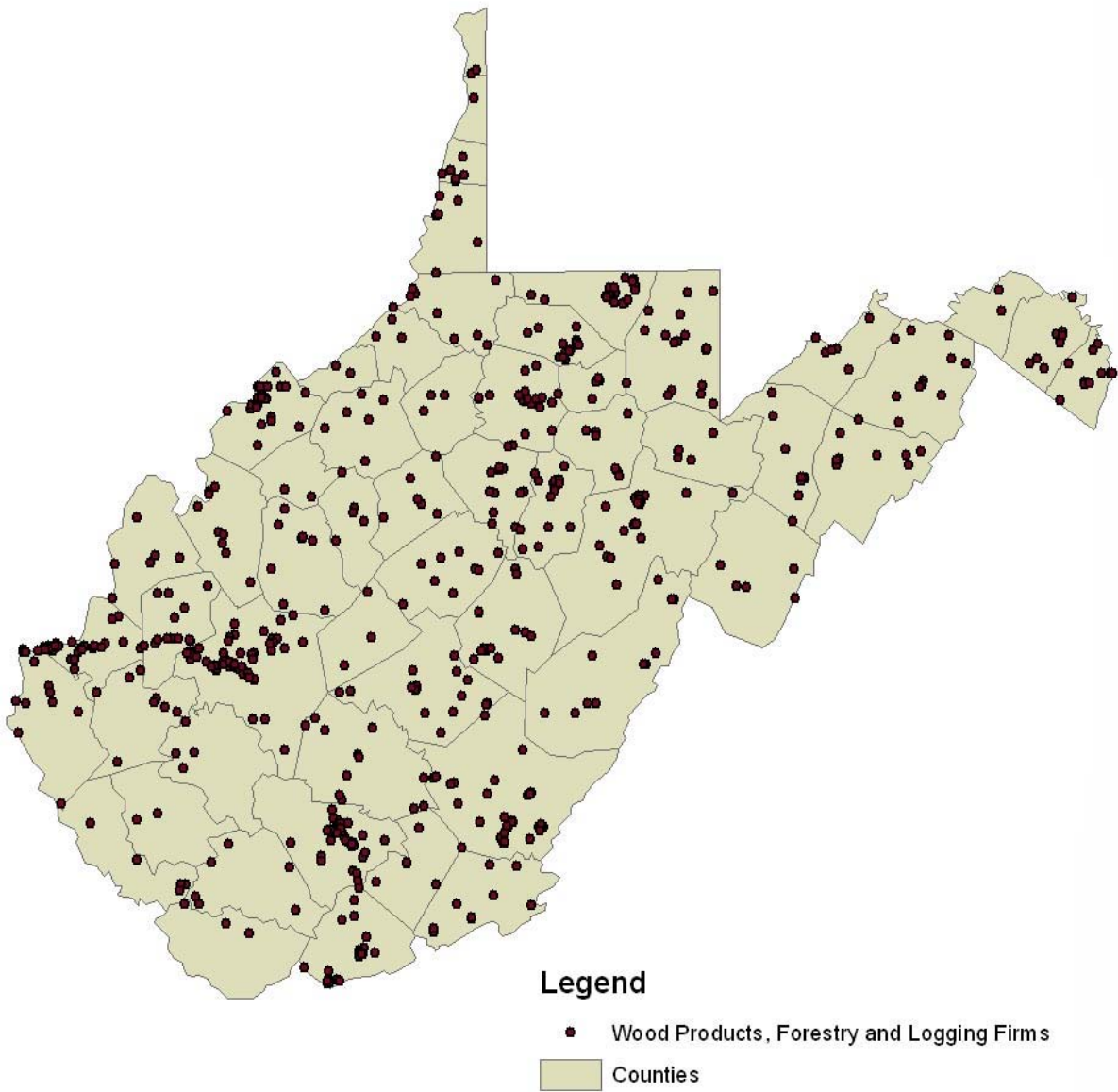




Table 2.1 – Timber and Wood Product Exports By Individual States

	2004 x 1K	2004	2004 x 1K	2004	2003 x 1M	2004/2003	2002 x 1M	2002 x 1M	2002 x 1M	2002 x 1M
State	Wood Exports (\$)	Percent of All Wood Exports	Total State Exports	Wood Share Total of State Exports	GSP	Export Share of GSP	Forestry and Fishing	Wood Products	Total Sector	Pct GSP
AL	125,437	4.6%	9,036,641	1.4%	132,145	6.8%	724	1,171	1,895	1.4%
CT	9,698	0.4%	8,559,237	0.1%	172,378	5.0%	94	93	187	0.1%
DE	964	0.0%	2,053,423	0.0%	49,146	4.2%	25	16	41	0.1%
FL	162,231	6.0%	28,981,515	0.6%	550,005	5.3%	1,767	1,051	2,818	0.5%
GA	132,243	4.9%	19,632,730	0.7%	320,007	6.1%	827	1,575	2,402	0.8%
IL	37,474	1.4%	30,213,626	0.1%	499,466	6.0%	356	630	986	0.2%
IN	145,790	5.4%	19,109,378	0.8%	214,080	8.9%	225	1,097	1,322	0.6%
KY	110,407	4.1%	12,991,977	0.8%	128,982	10.1%	415	540	955	0.7%
MA	24,647	0.9%	21,837,411	0.1%	297,343	7.3%	465	166	631	0.2%
MD	59,128	2.2%	5,746,142	1.0%	212,444	2.7%	144	198	342	0.2%
ME	90,410	3.3%	2,432,219	3.7%	40,960	5.9%	455	312	767	1.9%
MI	130,673	4.8%	35,625,008	0.4%	365,277	9.8%	395	753	1,148	0.3%
MS	76,509	2.8%	3,179,374	2.4%	72,293	4.4%	662	842	1,504	2.1%
NC	241,637	8.9%	18,114,767	1.3%	314,377	5.8%	753	1,568	2,321	0.7%
NH	42,516	1.6%	2,285,589	1.9%	49,047	4.7%	149	153	302	0.6%
NJ	25,845	1.0%	19,192,131	0.1%	397,469	4.8%	175	297	472	0.1%
NY	219,031	8.1%	44,400,729	0.5%	821,667	5.4%	414	588	1,002	0.1%
OH	199,236	7.3%	31,208,206	0.6%	403,015	7.7%	346	1,086	1,432	0.4%
PA	319,095	11.7%	18,487,253	1.7%	449,947	4.1%	662	1,617	2,279	0.5%
RI	865	0.0%	1,286,324	0.1%	39,569	3.3%	70	56	126	0.3%
SC	63,327	2.3%	13,375,890	0.5%	127,251	10.5%	382	527	909	0.7%
TN	84,598	3.1%	16,122,874	0.5%	199,786	8.1%	390	853	1,243	0.6%
VA	184,778	6.8%	11,630,744	1.6%	304,432	3.8%	377	1,452	1,829	0.6%
VT	30,786	1.1%	3,283,135	0.9%	20,670	15.9%	108	138	246	1.2%
WI	95,257	3.5%	12,706,343	0.7%	200,014	6.4%	477	1,350	1,827	0.9%
WV	107,691	4.0%	3,261,683	3.3%	47,256	6.9%	162	532	694	1.5%
TOTAL	2,720,273	100.0%	394,754,349		6,429,026		11,019	18,661	29,680	

**Table 2.2 – West Virginia Timber and Wood Product Export Partners**  
(Values X 1K)

<b>Partner</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
World Total	75,504	98,584	88,180	94,797	95,990	107,691
Canada	37,378	42,434	40,384	41,456	51,591	50,855
China	275	1,066	2,094	6,246	7,532	13,396
Hong Kong	1,535	5,076	6,162	7,822	7,681	8,248
United Kingdom	5,457	13,688	6,988	7,124	5,167	4,508
Spain	2,730	4,798	4,381	4,477	3,515	4,251
Taiwan	2,847	1,508	1,914	2,690	1,867	4,110
Japan	2,576	2,417	2,823	3,222	2,418	2,582
Belgium	6,554	7,621	5,969	5,478	2,933	2,094
Mexico	457	1,223	2,825	372	736	1,953
Italy	3,114	2,246	1,377	1,794	2,006	1,703
Thailand	123	313	760	1,274	965	1,656
Germany	3,917	5,433	2,817	2,774	1,267	1,570
Portugal	311	260	459	135	1,066	1,436
Indonesia	365	115	554	913	742	1,390
Malaysia	665	546	848	1,183	741	1,274
Viet Nam	0	13	249	492	623	1,183
France	980	1,892	1,473	1,147	723	1,125
Greece	1,037	1,193	705	639	470	650
Ireland	248	580	1,191	1,368	834	483
South Korea	1,344	1,726	866	878	408	384
Australia	139	231	341	571	214	375
South Africa	291	540	231	577	371	298
Denmark	776	513	449	291	102	235
Turkey	748	985	423	216	161	199
Hungary	0	0	0	0	90	171
Brazil	0	0	0	55	5	162
Chile	0	0	99	0	43	156
Saudi Arabia	83	34	338	15	78	146
Lebanon	39	138	116	92	0	145
Colombia	0	0	0	0	0	120
Israel	486	841	70	28	161	116
Latvia	0	83	333	19	213	114
Jamaica	0	0	3	0	0	110
Sweden	43	117	163	164	284	81
Panama	26	22	10	13	22	58
Syrian Arab Republic	0	0	0	0	16	55
Egypt	34	14	13	0	0	55
Luxembourg	8	0	0	20	133	43
Bermuda	0	0	3	0	0	42
Cayman Islands	0	0	0	0	0	28
Poland	339	0	65	0	0	27
Macau, SAR of China	0	0	0	0	0	23

**Table 2.1 (Continued)**

<b>Partner</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
Philippines	76	0	31	26	34	17
Netherlands	90	197	101	32	307	14
Malta	0	0	0	13	0	14
Estonia	0	0	0	0	83	13
New Zealand	0	0	0	0	0	12
Togo	0	0	0	0	0	11
Unidentified Countries	0	0	0	0	0	0
Maldives	0	0	113	222	0	0
Singapore	89	0	37	75	149	0
Jordan	0	0	43	32	49	0
Kuwait	55	28	0	0	3	0
United Arab Emirates	0	0	0	13	26	0
Pakistan	0	0	0	0	4	0
Cyprus	56	204	107	249	59	0
Slovenia	35	0	0	0	0	0
Switzerland	25	88	19	17	32	0
Austria	0	0	11	0	11	0
Trinidad and Tobago	24	33	0	0	0	0
Guatemala	24	17	0	26	0	0
Honduras	0	0	0	72	0	0
Norway	75	57	78	94	42	0
Finland	27	198	54	61	13	0
Peru	0	26	0	4	0	0
Iceland	7	71	90	319	0	0

Table 2.3 contains data describing the domestic (or domestic leg of international) shipping practices of regional producers. While there is no reliable data on intermodal movements, regional interviews make it clear that an overwhelming majority of all shipments are made by truck. Moreover, the shipment distances illustrate that most West Virginia production is consumed locally. The shipment distances for the intermodal tonnage is also consistent with shipper interviews, where there was a clear desire to more effectively penetrate western domestic markets.

**Table 2.3 – Summary of Shipping Practices**

	<i>Rail</i>		<i>Truck</i>		<i>Truck / Rail</i>	
	<i>Tons</i>	<i>Distance</i>	<i>Tons</i>	<i>Distance</i>	<i>Tons</i>	<i>Distance</i>
<b>Alabama</b>	2,218,260	486	44,577,264	196	n/a	n/a
<b>Georgia</b>	4,183,984	380	45,706,499	318	n/a	499
<b>Kentucky</b>	461,520	444	8,437,297	121	n/a	1,094
<b>Maryland</b>	22,460	818	253,910	44	n/a	2,944
<b>Mississippi</b>	3,508,000	462	32,147,647	150	n/a	2,429
<b>New York</b>	170,240	817	6,263,415	63	n/a	211
<b>North Carolina</b>	1,607,584	401	30,363,746	170	n/a	713
<b>Ohio</b>	138,960	656	8,054,873	142	n/a	1,334
<b>Pennsylvania</b>	299,388	1,098	14,947,838	115	n/a	2,510
<b>South Carolina</b>	2,591,588	285	22,405,613	401	n/a	1,390
<b>Tennessee</b>	1,200,380	604	9,897,033	113	n/a	377
<b>Virginia</b>	792,872	463	22,218,097	279	n/a	n/a
<b>West Virginia</b>	194,200	517	6,821,058	283	n/a	2,489
<b>TOTAL</b>	<b>17,389,436</b>	<b>572</b>	<b>252,094,289</b>	<b>184</b>		<b>1,454</b>
<b>AVERAGE</b>	<b>1,337,649</b>	<b>572</b>	<b>19,391,868</b>	<b>184</b>		<b>1,454</b>

### *3. Forward-Looking Strategies*

There was a general consensus among timber and wood product producers that the trend toward global markets probably won't subside within the foreseeable future. Consequently, a forward looking evaluation centered on how to participate more effectively within an international setting is needed. Based on discussions with shippers and with WVPA personnel, six alternatives were evaluated. These are first enumerated, then discussed in the text that follows. The options considered included:

- Development of a wood products consolidation center at or near Elkins;
- Development of a fumigation and container loading facility at or near Elkins;
- Development of a barge and rail served consolidation facility in Jackson County;
- Development of a West Virginia equipment pool;
- Utilization of facilities to be constructed at Prichard and Roanoke in conjunction with the *Heartland Corridor* initiative; and
- Motor Carrier work force development.

**Elkins Area Consolidation Facility** As Figure 2.1 illustrates, a substantial portion of West Virginia's timber and wood products production lies deep within the interior of the State in an area roughly centered on Elkins. Moreover, many of the producers within this region are relatively small in size, so that shipment sizes are sometimes less-than-truckload (LTL). Based on these observations, the study team considered the usefulness of a shipment consolidation facility within the Elkins area. Theoretically, by consolidating shipments to achieve greater shipment volumes, such a facility could potentially reduce motor carrier charges.

However, the study team ultimately rejected further pursuit of an Elkins area facility for two fundamental reasons. First, while area shippers have a number of concerns regarding motor carriage, shipment size generally ranks far down their list of issues. Driver shortages, fuel surcharges, and equipment shortage each ranked significantly higher as trucking issues and a shipment consolidation facility would provide no remedy to these issues. Second, while the level of cooperation between regional timber and wood products firms is, perhaps, on the rise, there remains a discernable reluctance to engage in any activity that might compromise the

confidentiality of individual shipment terms. Hence, the study team was fearful that the level of utilization would not be sufficient to sustain a shipment consolidation facility or produce any significant economic impacts.

**Elkins Area Fumigation and Container Facility** The study team considered a second alternative strategy also centered on the Elkins area. Hardwood logs are routinely shipped from the region by truck to east-coast port locations. At or near the port the logs are fumigated, then loaded into ocean-going shipping containers for movement abroad. Area firms have complained that the cost of the port activities impedes their ability to compete effectively in some international markets. Accordingly, the study team considered the possibility of a local fumigation and container loading facility as an efficiency-enhancing alternative to current practices.

As in the case of the shipment consolidation facility, the fumigation and container loading facility was also rejected. Again, there were two fundamental reasons for this decision. First, there is a 14 day window during which the fumigation certificate remains valid. Containers must be shipboard by the time that window closes or the logs must be fumigated a second time at additional costs. Steam ship calls to individual ports are heavily scheduled. Nonetheless, actual arrival and departure days can vary based on weather, port congestion, etc. By storing and fumigating the outbound products near the ports, shippers can minimize the risk that a shipment will need to be fumigated twice. Conversely, fumigation and containerization at the actual West Virginia origin would increase this risk. Consequently, there is no assurance that local handling would reduce overall shipping costs.

The second reason that the study team chose not to pursue this alternative relates to the seasonal nature of timber shipping. There are many months of the year during which logs are not suitable for shipment. During such times, a West Virginia facility would be completely inactive, while charges during active periods would be forced to account for year-around fixed costs. This outcome is less true at facilities located near seaports. These facilities often are better able to engage in alternative activities to fill any void in timber shipping. For this reason, there is, once again, no assurance that a West Virginia facility could yield appreciably lower shipping costs.

**Jackson County Multi-Modal Facility** One of the initial motivations of the current study was the desire by Jackson County residents to explore the location of a timber and wood products shipping facility that could take advantage of Ohio River shipping. Their idea was that ocean going containers could be barged, at least as far as the lower Mississippi for subsequent shipment to Latin America. County residents also noted that such a facility could also be served by both truck and rail.

In evaluating this possibility, the study team considered a number of issues. First, to our knowledge, few if any timber and wood products, other than wood chips, are transported via the inland navigation system. Thus, the Jackson County approach is, by all means, novel. Also, while container on barge (COB) operations are often discussed and are, in fact, occasionally used on other river systems, there is currently no scheduled COB operations on the Ohio River. Moreover, developing such a service is well beyond the scope of the WVPPA, at least as it is currently configured. Next, while Jackson County is rail-served (CSX Transportation), this service is provided over a secondary main line that sees only modest traffic. The likelihood that this line could support or will ever see the double-stack container service that is essential to efficient container movement by rail is exceedingly small. Nonetheless, the appeal of accessing Latin American markets via transportation costs that could be substantially lower than currently available routings is great.

There are two prominent uncertainties that plague this investigation. First, is the issue of fuel prices. If fuel prices continue to escalate, the likelihood of an independently developed Ohio River COB service will become much higher. Particularly on the export side of the ledger, an increasing volume of non-time-sensitive commodities are moving by container. Higher fuel costs might well move some portion of this traffic to the river. The second uncertainty has to do with the general growth in containerization. Currently, while West Virginia producers use containers to access Mexican and Central American markets, much of the alternative international supply arrives at Latin American ports in bulk. There is no doubt that the current trend is moving toward the increased use of containers for timber and wood products. However, this trend would need to continue well into the future if Ohio River COB shipments of such products are to offer any meaning savings to West Virginia shippers.

In the end, while the Jackson County proposal is intriguing, it is the study team's judgment that it is premature. Perhaps, ten years into the future, the development of a COB facility for the movement of wood products will reflect sound thinking. However, at the current juncture there are likely alternative activities that can be of more immediate import to the industry.

**West Virginia Equipment Pool** Many of the most routine complaints voiced by West Virginia timber and wood products producers centered on the lack of available transportation equipment. In the case of relatively close domestic markets, shippers complained that they could not acquire trailers. In the case of more distant domestic and international destinations, the same shippers complained about the availability of containers and the chasses on which they ride during highway movement.

A small number of West Virginia timber and wood product shippers own and maintain their own vehicle fleets. For the most part, however, trailers are owned and controlled by contract carriers. Containers and container chasses are almost exclusively owned by the steam ship lines that provide international transport. These lines often have interests and commitments that leave West Virginia firms at the end of the equipment queue.

One potential response to the problem of equipment availability is the internal development of centrally managed equipment pools. There are many existing models of these pools from which developers could draw inspiration. Generally, however, shippers with similar equipment needs and similar geographic resources tend to acquire equipment which they share. This arrangement both improves availability and equipment utilization rates.<sup>3</sup>

Within the current context, there are two problems that inhibit implementation of such a system. The first of these is cultural, the second more practical. First, as noted, the level of cooperation between West Virginia producers is weak. Equipment pooling would commercially link firms that are fiercely independent, so there is no guarantee these producers would utilize an

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<sup>3</sup> The problem of container and, particularly, chasses availability is common to major port areas and, though the steam ship lines are resistant, many port areas are currently in the process of developing precisely the type of pools described here.

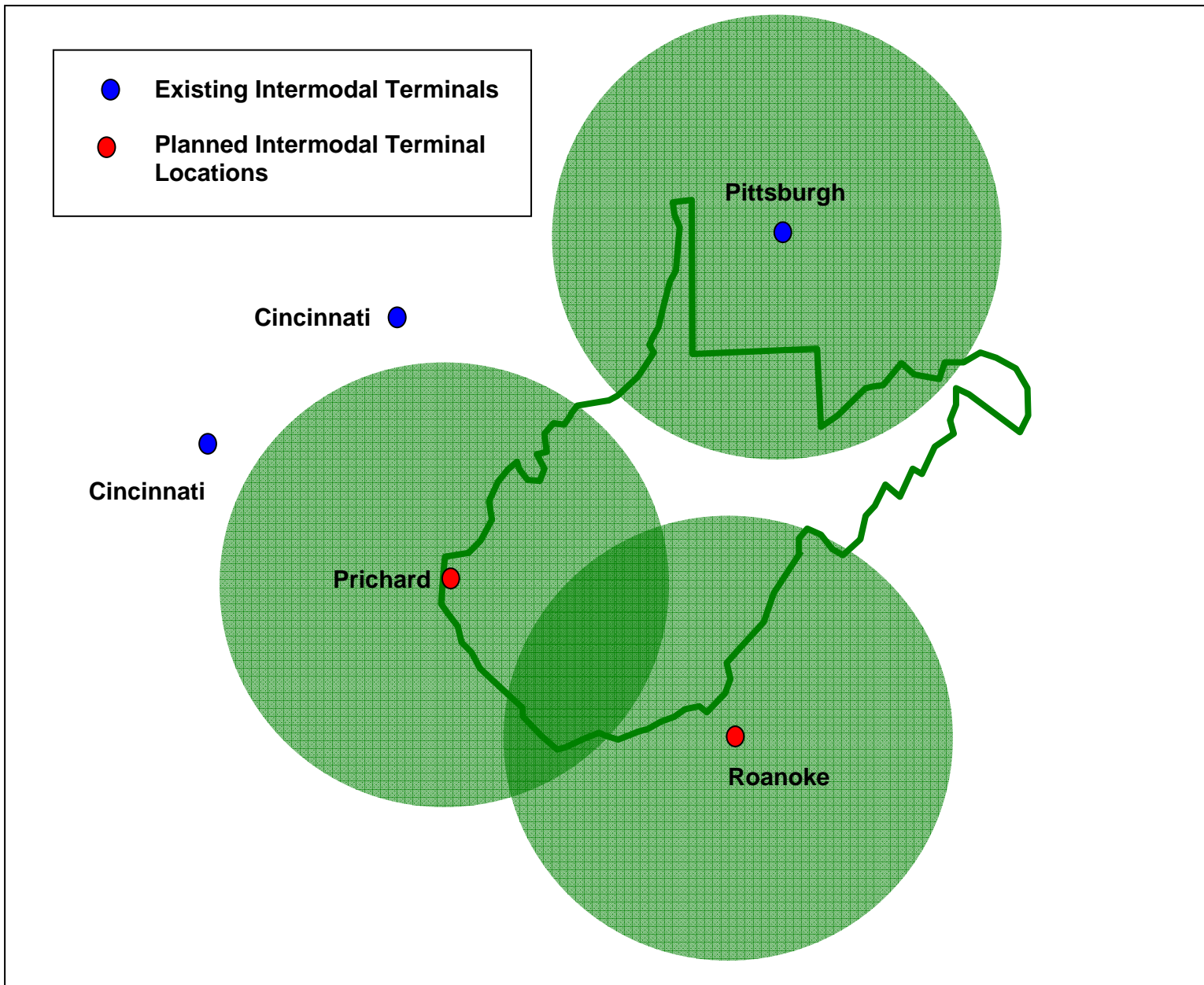


equipment pool even if it became available. Secondly, given currently available, institutional constructs, there is no State entity capable of acquiring and managing the necessary trailers, containers and chasses. This latter constraint will be further discussed in Section 4.

**The Heartland Corridor** The 2005 federal transportation bill (SAFE-TEA-LU) authorized the improvement of terminal and railroad line-haul connections between port facilities at Norfolk and the upper Midwest. This series of infrastructure improvements is generally referred to as the *Heartland Corridor* initiative. In conjunction with the overall Heartland effort the State of West Virginia plans to develop a mechanized double-stack container facility immediately west of Huntington, at Prichard. Similarly, the commonwealth of Virginia plans to build a nearly identical facility at a location along I-81 between Roanoke and Blacksburg.

Figure 3.1 depicts the locations of existing intermodal terminals capable of loading and unloading double-stacks. Prichard and Roanoke are also included in this graphic. For Prichard, Roanoke and Pittsburgh, this figure also includes shaded areas that reflect a distance of 100 miles from each location. While Pittsburgh is now the most common truck destination for timber and wood products that are to be containerized for west-bound rail movements, clearly some movements that have their actual origins in western West Virginia can be moved much more efficiently over Prichard. Similarly, some timber and wood product movements from southeastern West Virginia could move more expeditiously over Roanoke. Finally, even in the cases where the shipping distance to Pittsburgh is similar to distances to Prichard or Roanoke, the latter two locations may be preferable, depending on the terminal services that are available at those locations.

The study team is hopeful that the timber and wood products industries, in conjunction with the WVPPA, will work to ensure that necessary ancillary services will be developed at the new intermodal terminal locations, thereby assisting both the industries and the development of the terminals.



**Workforce Development Activities** West Virginia, like virtually every state in the nation, is facing trucking challenges associated with escalating fuel prices and driver shortages. Unfortunately, from a policy perspective there is very little, in the short-run, the State can do regarding fuel prices. However, it should be possible to develop programs to attract and train new drivers. There are many existing workforce training programs which could likely be adapted for this purpose. Moreover, Marshall University has extensive experience in training workers for both the railroad and towing industries.

## *4. Study Conclusions*

Timber and wood products represent a vital and remarkably stable sector of West Virginia's economy. Like so many others, it is also a sector that is rushing to adapt to the rapid emergence of global markets. So, the ability to achieve competitive transportation costs is key to future successes.

West Virginia policy-makers in general and the West Virginia Public Port Authority specifically are very much attuned to this need and have shown a willingness to explore every possible avenue of support. Unfortunately, given the physical, institutional, and cultural constraints that surround the industry and the movement of the goods it produces, the opportunities for positive State intervention are, perhaps, more limited than one might have supposed.

Shipment consolidation facilities, while appealing in theory, do not seem to have a practical place within the foreseeable future. Similarly, the container-on-barge movement of timber and wood products is probably a generation away from any meaningful role in the timber and wood products supply chain. The most notable opportunities for positive State involvement would appear to be linked to marginally improving the already existing patterns of transportation.

Equipment availability is a perennial problem for timber and wood products shippers and is one that might well be addressed through the development of an equipment pool that provides trailers, containers and chasses to West Virginia shippers. Currently, there is no institutional mechanism for accomplishing this, but the WVPPA has undertaken efforts, which once completed, may remedy this deficit. It is also possible for the State to help the industry address the chronic driver shortage. There are any number of State programs that could be adapted to meet this goal. Finally, developing the truck / rail intermodal facility at Prichard holds great promise. Moreover, while the impact of the Prichard facility can be immediate, its future importance could be breathtaking.

In the end, some may find it disappointing that there are no greater courses than these that the State of West Virginia might pursue to improve transportation opportunities for timber and wood product producers, yet we can hardly be surprised. The industry is comprised of rugged and savvy individuals. If there was obvious magic to be done, the industry, itself, would have already recognized these opportunities and acted upon them. Equipment pooling, driver training and intermodal facility development will help if they are actively pursued. Moreover, the current investigation stands as proof of the WVPPA's very active pursuit of new and novel transportation alternatives. It is an approach that is, at the very least, refreshing.