Heartland Port Authority of Central Missouri
Board of Commissioners

Tuesday, May 6, 2020
1:00pm

Due to COVID 19, the Heartland Port Authority meeting will be available for viewing at the following:
https://global.gotomeeting.com/join/915869989

You can also dial in using your phone
+1 (669) 224-3412
Access Code: 915-869-989

Tentative Agenda

1. Roll Call
2. Approval of Agenda
3. Final Presentation of Market Study with DIS and Mercator
4. Adjournment

Comprehensive market study for the Heartland Port project

Final report—Executive summary

Jefferson City Area Heartland Port Authority

for the Heartland Port Authority

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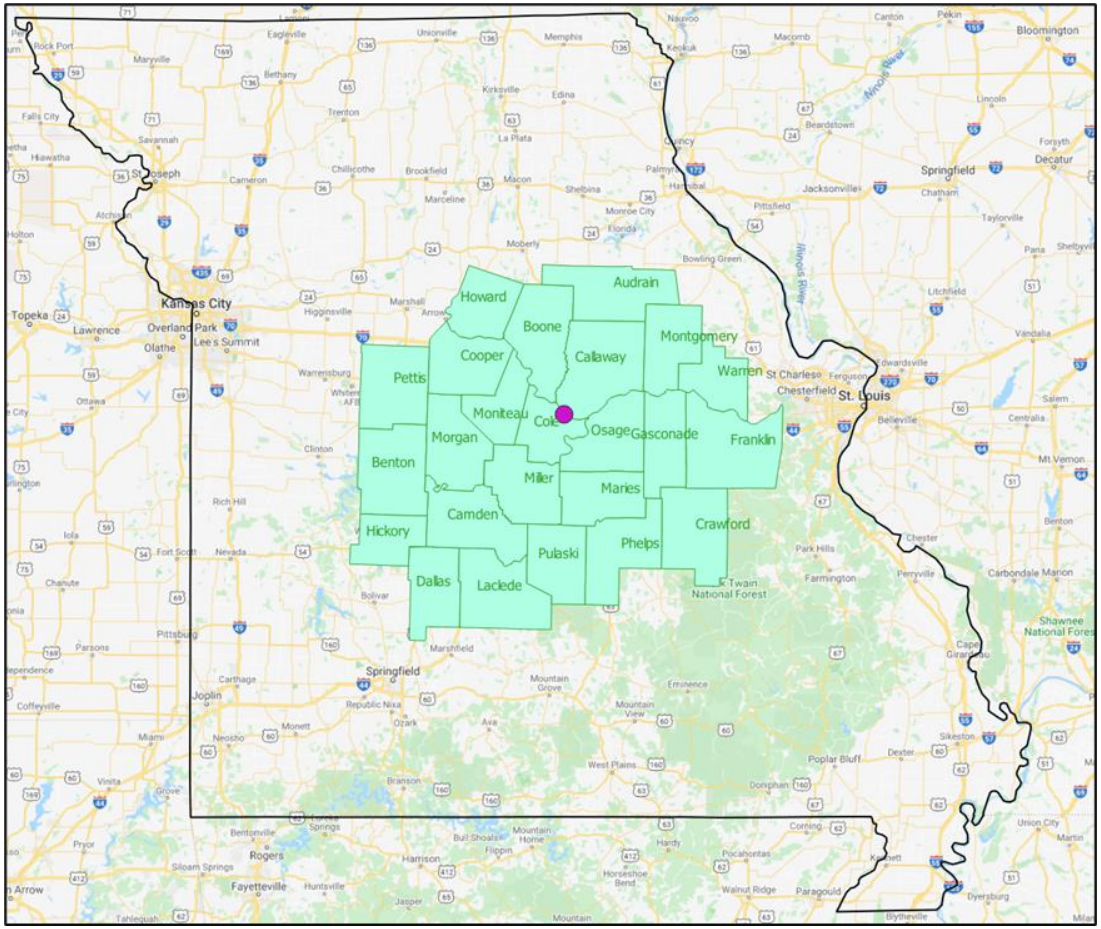
May 6, 2020

Report contents

Section
1. Introduction
2. Freight transportation system in Central Missouri
3. Market analysis
4. Heartland Port: route economics and key target markets
5. Conceptual structure of the Heartland Port concession and operational model
6. Financial analysis
7. Environmental regulatory requirements
8. Key conclusions and recommendations

Objectives and study area

- **Phase 1: Comprehensive market study**
  - Identify companies in a 24-county area that could utilize the port
  - Identify commodity markets and understand how commodities flow from producers to markets
- **Phase 2: Preliminary financial viability assessment**
  - Design detailed business model
  - Evaluate preliminary financial viability



2. Freight transportation system in Central Missouri

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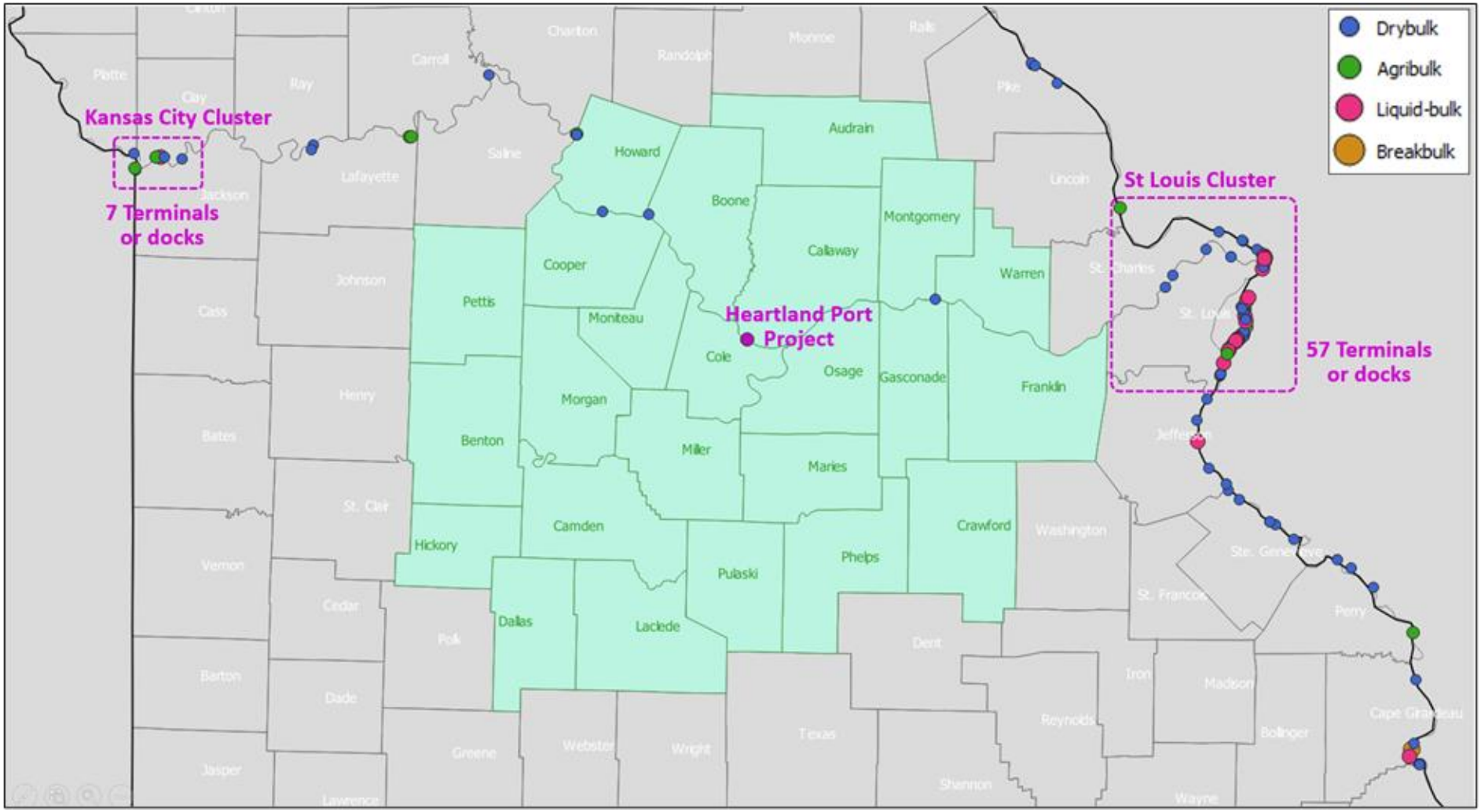
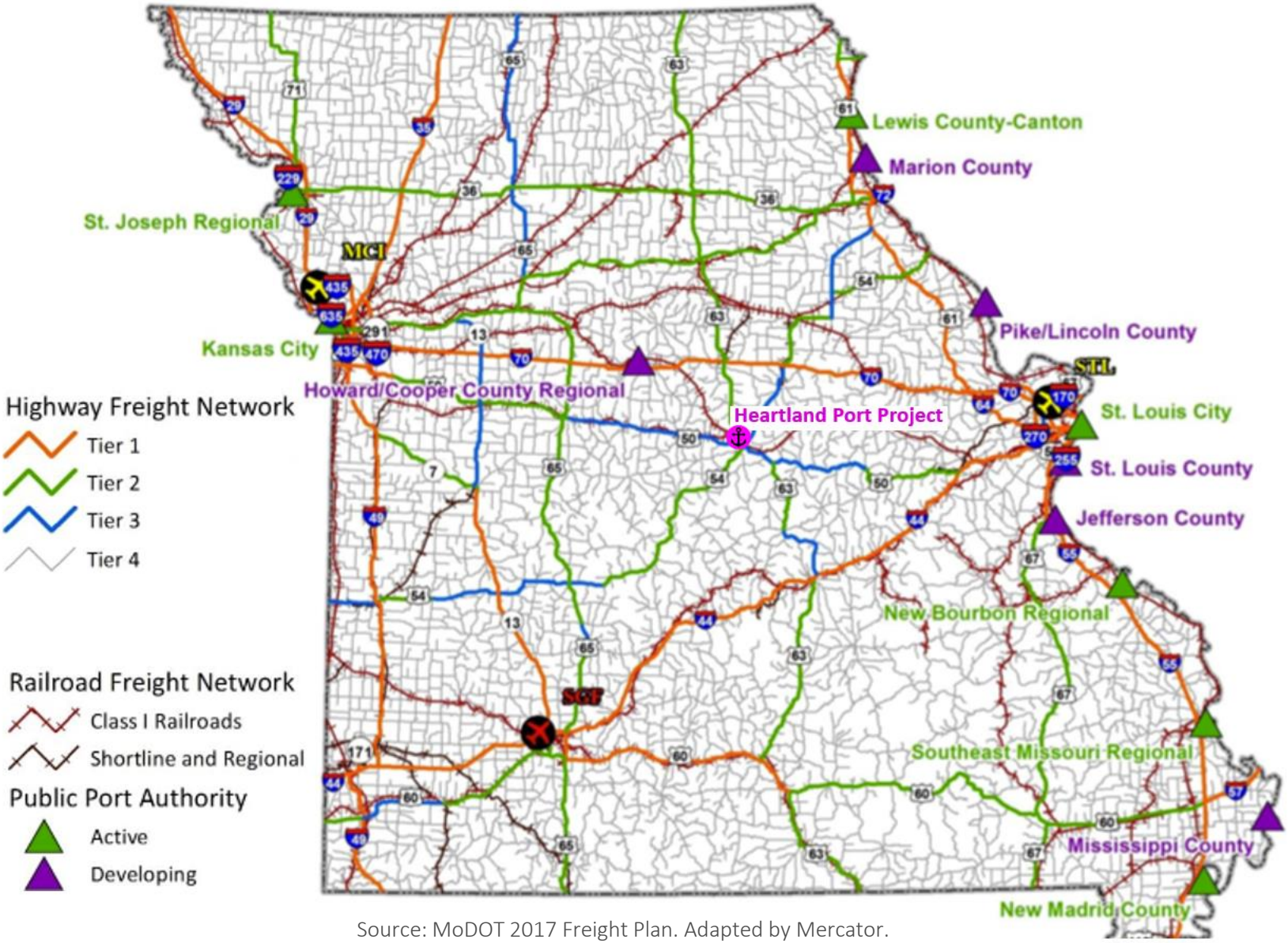
Private river terminals and docks



Missouri Freight Transportation Network



Source: MoDOT 2017 Freight Plan. Adapted by Mercator.

Major trade corridors

Freight Transportation System—key takeaways

- Fast and efficient access to Missouri's most important freight arteries in all relevant modes (i.e. truck, rail, and waterways).
- Freight flows by truck and rail indicates levels of service on the system are exhibiting signs of congestion and poor freight flows by truck and rail.
- Marine highways M70 statement with access to fed funds.
- Marine highways have the potential to provide additional capacity in a more cost effective and environmentally way.

3. Market analysis

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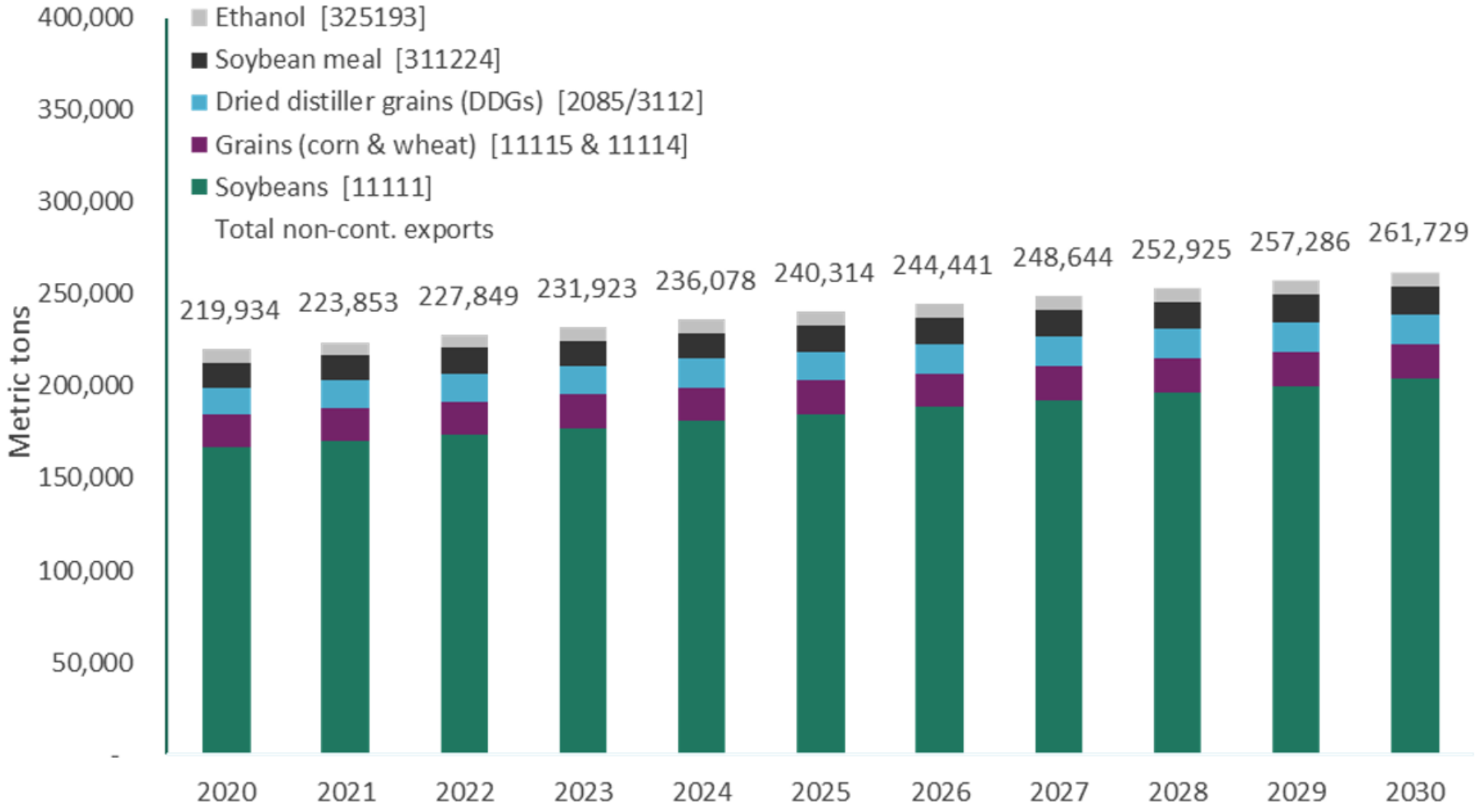
Potential volume estimates for the Heartland Port Project

- **Non-containerized Bulk**
  - Agri-bulk
  - Break Bulk
  - Liquid Bulk
  - Dry Bulk

- **Containers**
  - Imports
  - Exports
  - (Forestry quantities included in containers)

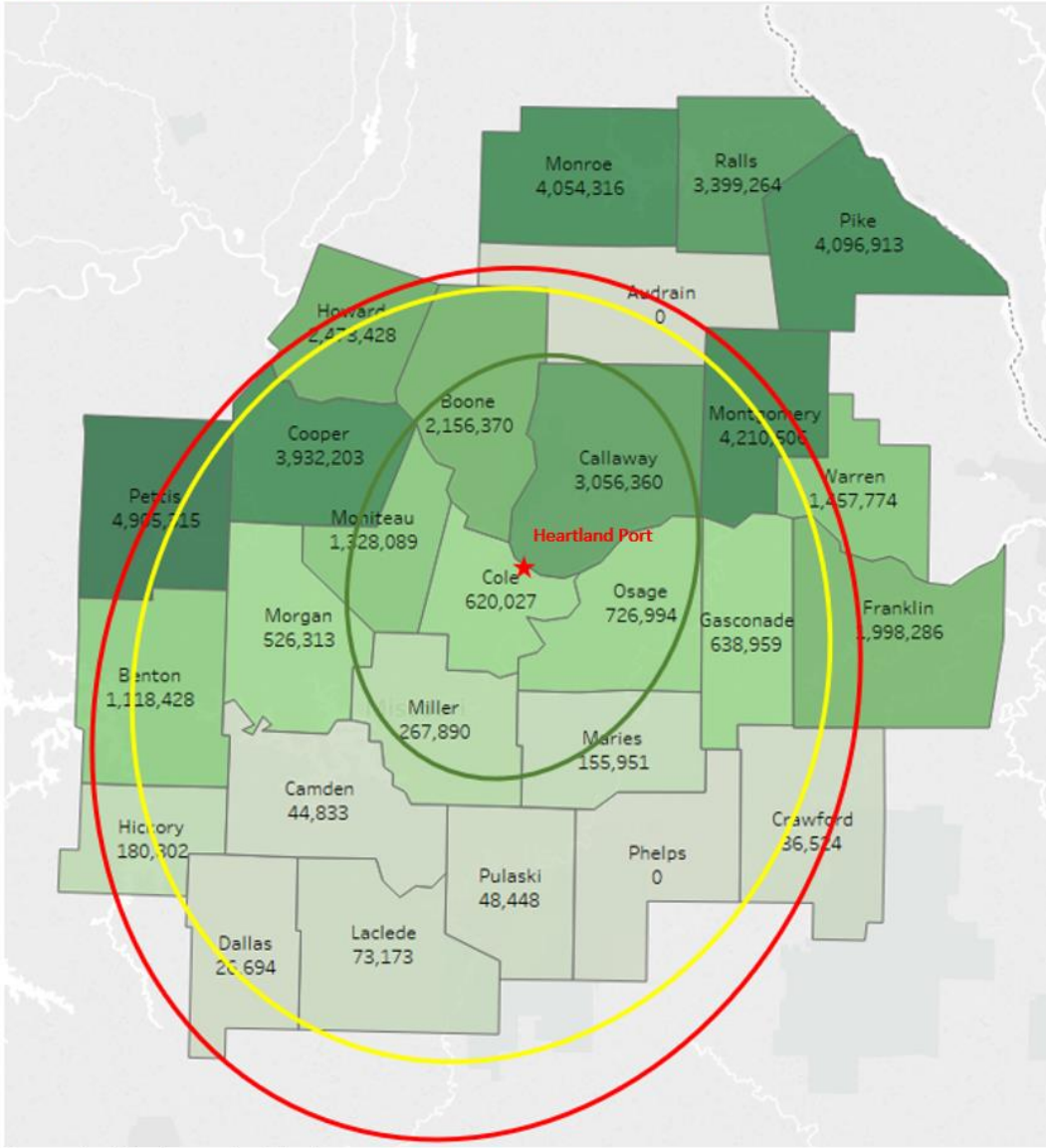
Agribulk analysis—key takeaways

Figure E2 Forecast of non-containerized exports for the 24-county study area by commodity (metric tons)



Agribulk analysis—key takeaways

Figure 31. Soybean exports, 2017-18 marketing year (bushels)

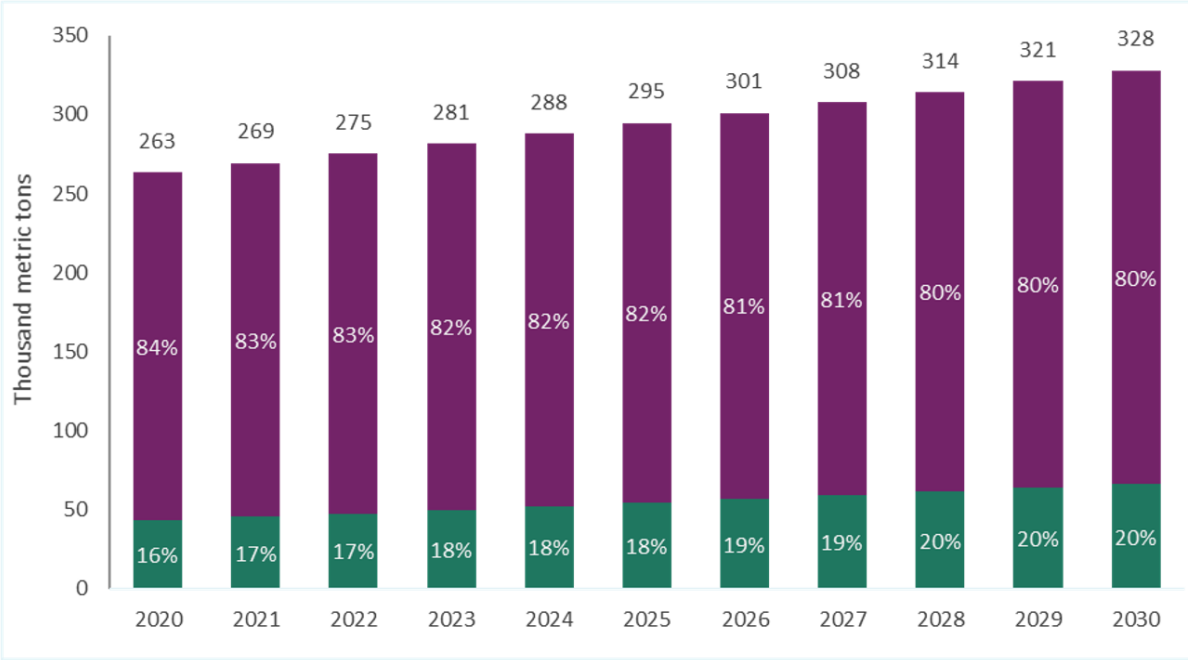


Source: Decision Innovation Solutions.

- In the primary draw area of HPA, the size of the overall market is about **6.5 million bushels** (176,918 MT) of soybean exports.
- From this area, DIS estimates that about 60%, equivalent to **3.9 million bushels**, can be served by the Heartland Port.
- About **17 million bushels** (117,011 MT) of soybeans available for exports, with about **2.1 million bushels** (63,006 MT) can be served by the Heartland Port.
- This provides an overall target market of about **6 million bushels** (163,309 MT) of soybean exports.

Non-containerized cargoes—key takeaways

Figure 41. Non-containerized volumes in the 24-county study area—total (million metric tons)



Source: Decision Innovation Solutions.

- DIS expects this market to be around **263,000 MT in 2020** the starting year of the forecast.
- Grow up to **328,000 MT in 2030**, a CAGR of 1.9% for the volumes in the 24-counties total.
- From this total, the headhaul is expected to be dominated by exports with 84% in 2020.
- Non-containerized imports are expected to remain at 16%.

Table 12. Non-containerized volumes for the 24-county study area (000s metric tons)

Non-containerized	Units	2020	2021	2022	2023	2024	2025	2030	2035	2040	2045	2050
Non-cont. imports	000s metric tons	43.3	45.3	47.3	49.5	51.9	54.2	66.0	78.0	90.2	102.6	112.6
Non-cont. exports	000s metric tons	219.9	223.9	227.8	231.9	236.1	240.3	261.7	282.7	303.9	324.9	345.7
Total non-cont.	000s metric tons	**263.3**	**269.1**	**275.2**	**281.5**	**287.9**	**294.5**	**327.7**	**360.6**	**394.1**	**427.4**	**458.3**
Non-cont. imports	%share of Tot	16%	17%	17%	18%	18%	18%	20%	22%	23%	24%	25%
Non-cont. exports	%share of Tot	84%	83%	83%	82%	82%	82%	80%	78%	77%	76%	75%
Total non-cont.	Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Non-cont. imports	YoY%	4.4%	4.5%	4.5%	4.6%	4.7%	4.5%	3.7%	3.2%	2.8%	2.5%	1.1%
Non-cont. exports	YoY%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.7%	1.5%	1.4%	1.2%	1.3%
Total non-cont.	YoY%	**2.2%**	**2.2%**	**2.3%**	**2.3%**	**2.3%**	**2.3%**	**2.1%**	**1.9%**	**1.7%**	**1.5%**	**1.3%**

Summary of non-containerized imports and exports

Table 17. Imports and exports of non-containerized cargo by commodity for the 24-counties (000s metric tons)

Imports	Type	Yr 0	1	2	3	4	5	6	7	8	9	10	15	20	30
Nonmetallic gravels, minerals [2123]	Drybulk	19.0	20.3	21.7	23.2	24.8	26.4	28.0	29.6	31.2	32.8	34.4	42.4	50.4	64.4
Chemicals and industrial gases [3251]	Breakbulk	6.7	6.7	6.8	6.8	6.8	6.8	6.8	6.8	6.9	6.9	6.9	7.1	7.3	7.7
Iron, steel, ferroalloy products [3311]	Drybulk	3.4	3.6	3.7	3.8	4.0	4.1	4.2	4.4	4.5	4.7	4.8	5.5	6.2	7.5
Pesticides, fertilizers, agri-chem [3253]	Drybulk	3.1	3.2	3.3	3.4	3.6	3.7	3.8	3.9	4.0	4.2	4.3	5.0	5.9	8.1
Nonferrous metals (excl.alum) [3314]	Drybulk	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Target volume for non-cont. imports		**34.7**	**36.2**	**37.9**	**39.6**	**41.5**	**43.4**	**45.2**	**47.1**	**49.0**	**50.9**	**52.8**	**62.4**	**72.1**	**90.1**
Exports	**Type**	**Yr 0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**15**	**20**	**30**
Soybeans [11111]	Agribulk	133.4	136.2	139.0	142.0	144.9	148.0	150.9	154.0	157.0	160.2	163.4	178.3	193.4	222.0
Grains (corn & wheat) [11115 & 11114]	Agribulk	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	15.0	15.5	16.1	17.2
Dried distiller grains [2085/3112]	Agribulk	12.1	12.2	12.3	12.3	12.4	12.5	12.6	12.7	12.8	12.9	12.9	13.4	13.8	15.3
Soybean meal [311224]	Agribulk	10.8	11.0	11.1	11.2	11.3	11.4	11.5	11.7	11.8	11.9	12.0	12.5	13.1	14.0
Ethanol [325193]	Liq. bulk	5.6	5.7	5.7	5.7	5.8	5.8	5.9	5.9	5.9	6.0	6.0	6.4	6.8	8.0
Target volume for non-cont. exports		**175.9**	**179.1**	**182.3**	**185.5**	**188.9**	**192.3**	**195.6**	**198.9**	**202.3**	**205.8**	**209.4**	**226.1**	**243.2**	**276.6**
TOTAL non-containerized	**Units**	**Yr 0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**15**	**20**	**30**
Imports total	000 MT	34.7	36.2	37.9	39.6	41.5	43.4	45.2	47.1	49.0	50.9	52.8	62.4	72.1	90.1
Exports total	000 MT	175.9	179.1	182.3	185.5	188.9	192.3	195.6	198.9	202.3	205.8	209.4	226.1	243.2	276.6
Target volume for non-cont. cargo	000 MT	**210.6**	**215.3**	**220.2**	**225.2**	**230.4**	**235.6**	**240.8**	**246.0**	**251.4**	**256.7**	**262.2**	**288.5**	**315.3**	**366.7**

Table 18. Base Case volume forecast by cargo type from the 24-counties (000, metric tons)

Non-containerized TOTAL (metric tons)	Yr 0	1	2	3	4	5	6	7	8	9	10	15	20	30
Breakbulk (chem & ind gases)	6.7	6.7	6.8	6.8	6.8	6.8	6.8	6.8	6.9	6.9	6.9	7.1	7.3	7.7
Agribulk (corn, soybean, DDG, & meal)	170.3	173.4	176.6	179.8	183.1	186.4	189.7	193.0	196.4	199.8	203.4	219.7	236.3	268.6
Drybulk (mineral & fertilizer)	27.9	29.5	31.1	32.9	34.7	36.6	38.4	40.3	42.1	44.0	45.9	55.3	64.9	82.4
Liquid bulk (ethanol, chemic, & ind. gases)	5.6	5.7	5.7	5.7	5.8	5.8	5.9	5.9	5.9	6.0	6.0	6.4	6.8	8.0
Target volume for non-containerized cargoes	**210.6**	**215.3**	**220.2**	**225.2**	**230.4**	**235.6**	**240.8**	**246.0**	**251.4**	**256.7**	**262.2**	**288.5**	**315.3**	**366.7**

Forestry products—key takeaways

- Forestry is another category of products that are exported from the 24-county study area.
- The largest category of forestry exports is “Logs” and logs are very likely to be exported in containers, thus we’ve assumed that all exports in the APHIS data are exported in containers.
- Total exports of forestry products from Missouri were reported by USDA-APHIS as 111,001 metric tons in 2019 with 21,312 metric tons being shipped from the 24-county study area.
- Table 11 of the report has details on forestry products.

Table 11. Estimated annual exports of forestry and lumber (Missouri and 24-county study area)

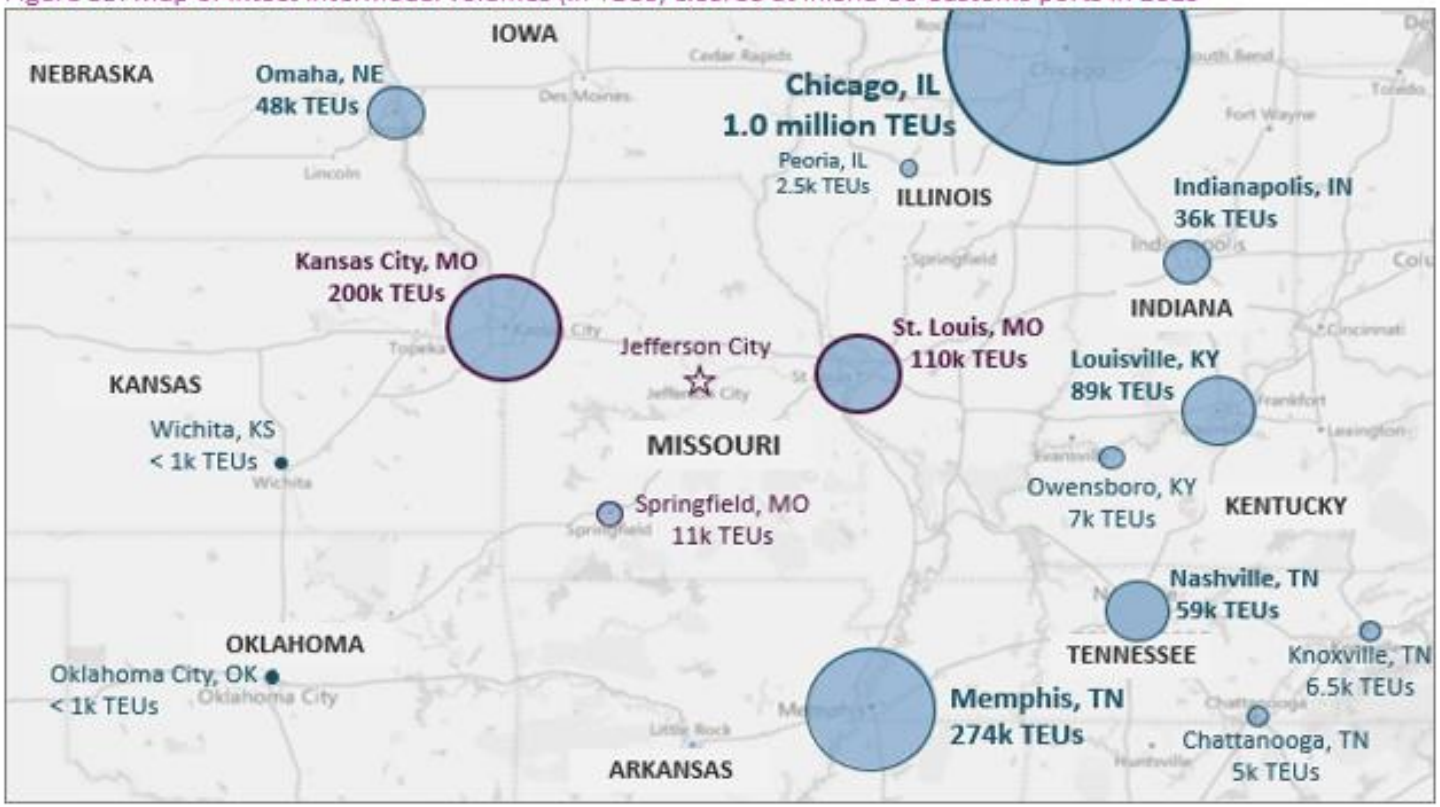
Part Name	Annual MT (Missouri)	Annual MT (24-County Study Area)
Logs	64,886	12,458
Lumber	43,282	8,310
Staves and Heading	1,436	276
Staves	392	75
Cants	237	46
Stocks	210	40
Chips	293	56
Blanks	97	19
Barrels	74	14
Headings	91	17
Cubes	3	0
Total	**111,001**	**21,312**

Map of intact intermodal volumes

- In total, just under **180,000** intact intermodal **containers** (mostly 40 ft containers, but some 20 ft), equivalent to **310,000 TEUs** of imports were cleared at KC/SL facilities in 2019.
  - An additional **11,000 TEUs** cleared in Springfield, Missouri.

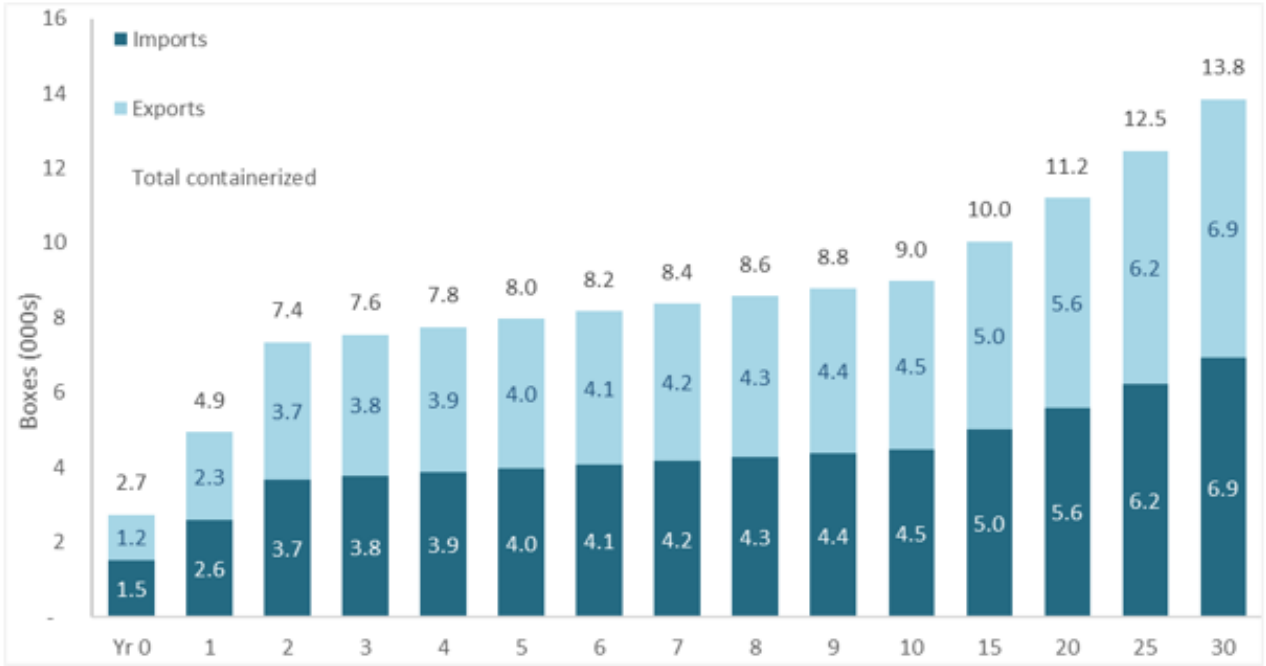
- Chicago clearly dominates the landscape, handling four times the volume of the next closest US Customs port, Memphis, Tennessee.

Figure 55. Map of intact intermodal volumes (in TEUs) cleared at inland US Customs ports in 2019



Containerized analysis—key takeaways

Figure E3. Base Case volume forecast and ramp-up for containerized cargo (Lifts)



- Under the base case assumptions, volumes would grow from around **2,750 lifts per year** to around **13,850 lifts per year** over the 30-year forecast period.
- This equates to a compound growth rate of 5.5% per year, but most it is associated with the ramp up in share capture in the initial years.
- Over the long-term, the growth rate would gradually decline from 2.8% per year to around 2.1%.

Table 26. Base Case 30-year Jefferson City volume forecast

	Y0	Y1	Y2	Y3	Y4	Y5	Y10	Y20	Y30
North American Import Growth Rate		2.9%	2.8%	2.8%	2.7%	2.6%	2.3%	2.2%	2.1%
Heartland Port Volumes									
TEUs									
Inbound	2,652	4,524	6,396	6,573	6,749	6,926	7,810	9,749	12,040
Outbound	2,122	4,072	6,396	6,573	6,749	6,926	7,810	9,749	12,040
Total	4,774	8,596	12,792	13,145	13,499	13,852	15,620	19,498	24,079
Lifts (at 1.74 TEUs/container)									
Inbound	1,524	2,600	3,676	3,777	3,879	3,981	4,488	5,603	6,919
Outbound	1,219	2,340	3,676	3,777	3,879	3,981	4,488	5,603	6,919
Total	2,743	4,940	7,352	7,555	7,758	7,961	8,977	11,206	13,839
Total Growth Rate		80.1%	48.8%	2.8%	2.7%	2.6%	2.3%	2.2%	2.1%

Market analysis—key takeaways

- 42% positively responding *(reference: pg. 24)*
- 10% cost savings would trigger a switch to barge *(reference: pg. 25)*
- Interest from agribulk, fertilizer, and harvested timber *(reference: pg. 26)*
- 3.2.2 Volume grew at impressive CAGR of 6.5% *(reference: pg. 28)*
- 3.3.1 Storage inside or near HPA can represent an advantage *(reference: pp. 29-30)*
- 3.3.6 Statement on forest products *(reference: pg. 44)*
- 3.4.1 Soybeans represent the highest potential for Heartland Port
- Summary of grain markets *(reference: pg. 61)*

4. Route economics and key target markets

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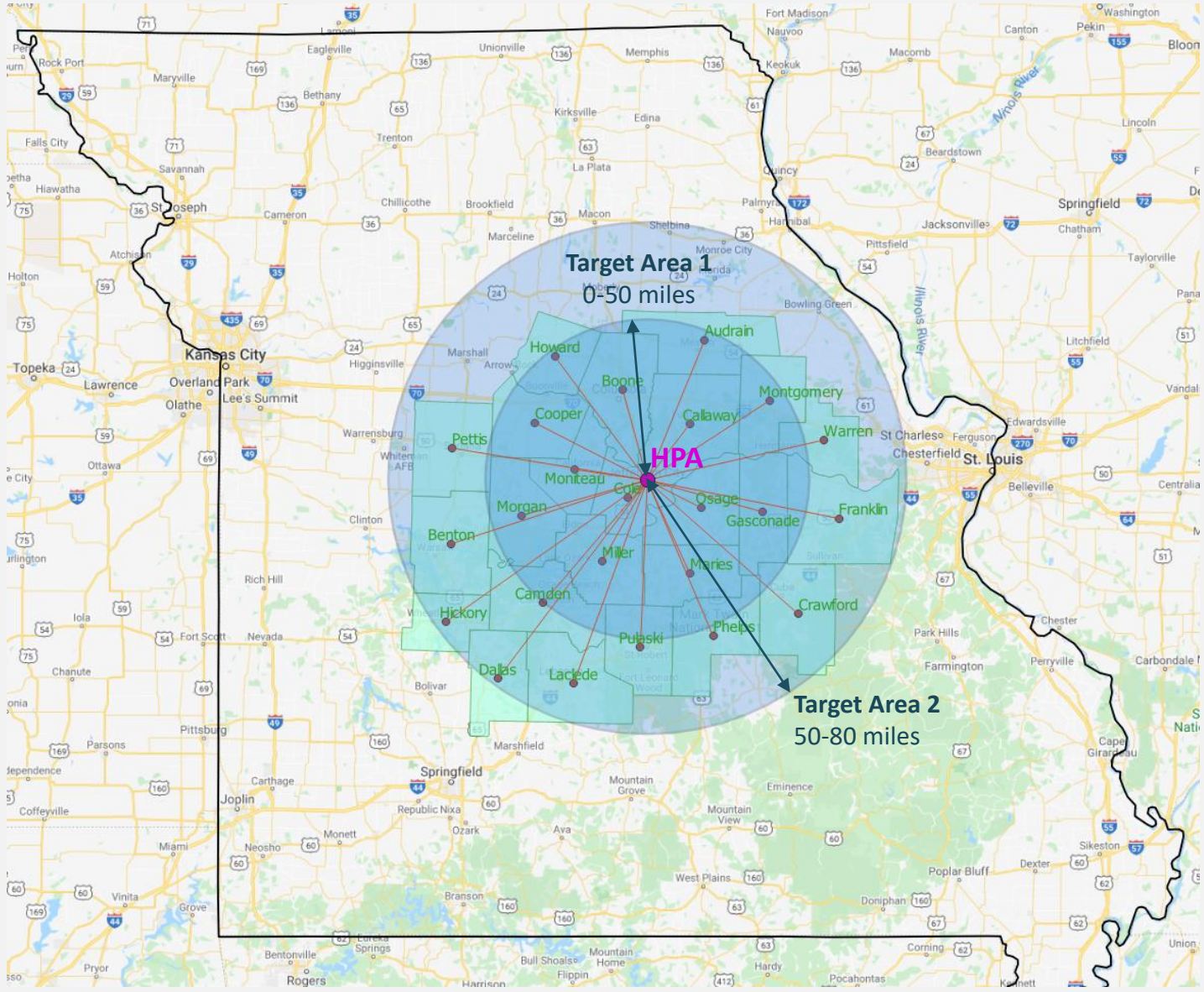
Target markets—trade areas by distance to/from HPA



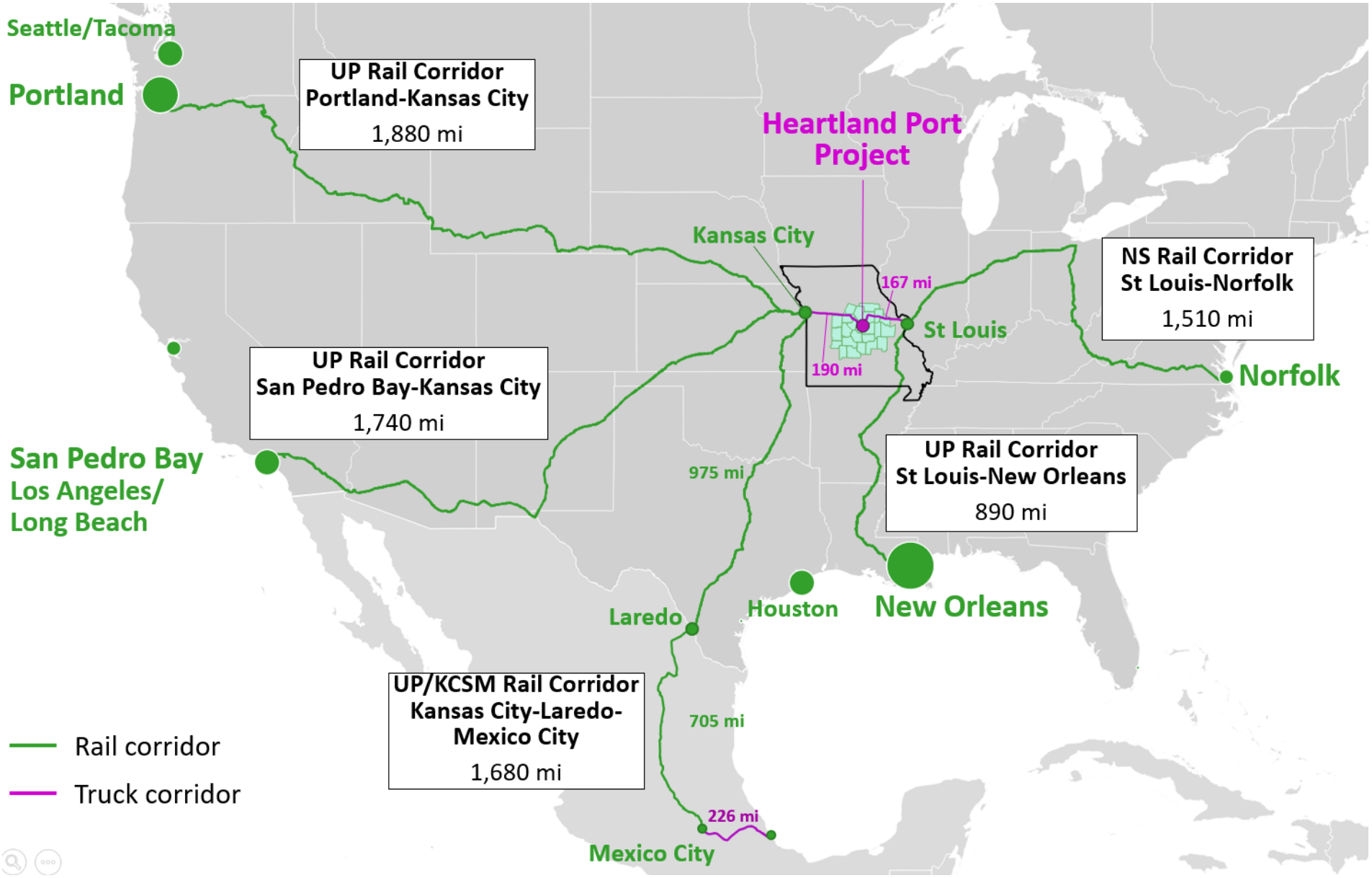
Counties in the 50 mi radius	Dist. to/from HPA (miles)
1. Audrain	47
2. Boone	29
3. Callaway	22
4. Camden	50
5. Cole	8
6. Cooper	39
7. Gasconade	37
8. Howard	48
9. Marries	32
10. Miller	29
11. Moniteau	23
12. Montgomery	45
13. Morgan	40
14. Osage	19

Counties in the 80 mi radius	Dist. to/from HPA (miles)
1. Benton	64
2. Crawford	63
3. Dallas	78
4. Franklin	60
5. Hickory	77
6. Laclede	68
7. Pettis	61
8. Phelps	53
9. Pulaski	52
10. Warren	56

excl. counties in the 50 mi radius.

Summary statistics	
Median	47.5149
St dev (pop)	18.1958
St dev (sample)	18.5872
Minimum	8.19233
Maximum	77.9194

Non-container routes for agribulk commodities



Incumbent route costs 2020: non-containerized cargo

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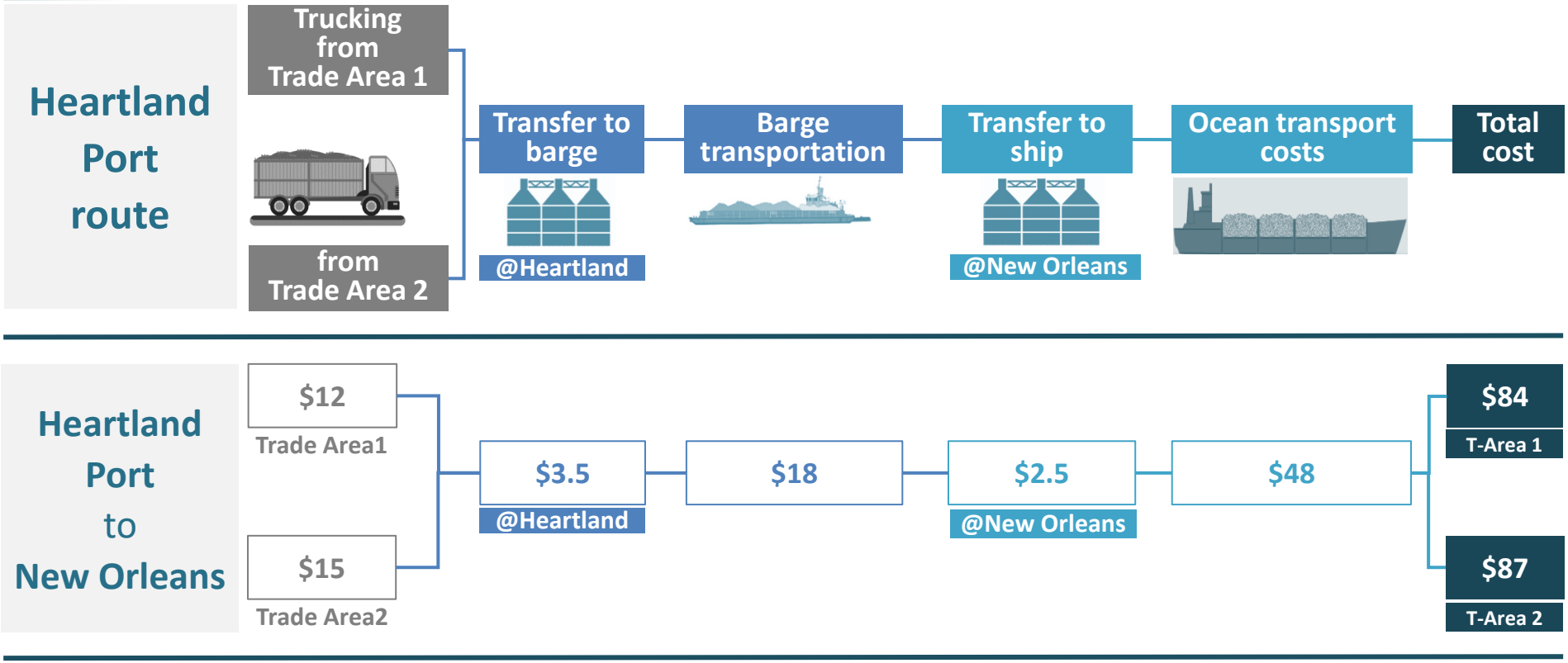
Alternative routes	Trucking	Transfer to rail	Rail transportation	Transfer to barge	Barge transportation	Transfer to ship	Ocean transport costs	Total cost
Jefferson City to New Orleans	$24	$2.5 @St Louis	$46.5	$3.5 @St Louis	$16.5	$2.5 @New Orleans	$48	$124 / $93
Jefferson City to Pacific Northwest	$27	$2.5 @Kansas City	$73.5			$2.5 @PNW	$23	$128
Jefferson City to San Pedro Bay	$27	$2.5 @Kansas City	$83.5			$2.5 @SPB	$24	$140

Heartland Port route costs: non-containerized cargo



Agribulk route cost savings

Table 15. Route cost savings offered by the Heartland Port Project at $6.00/metric ton

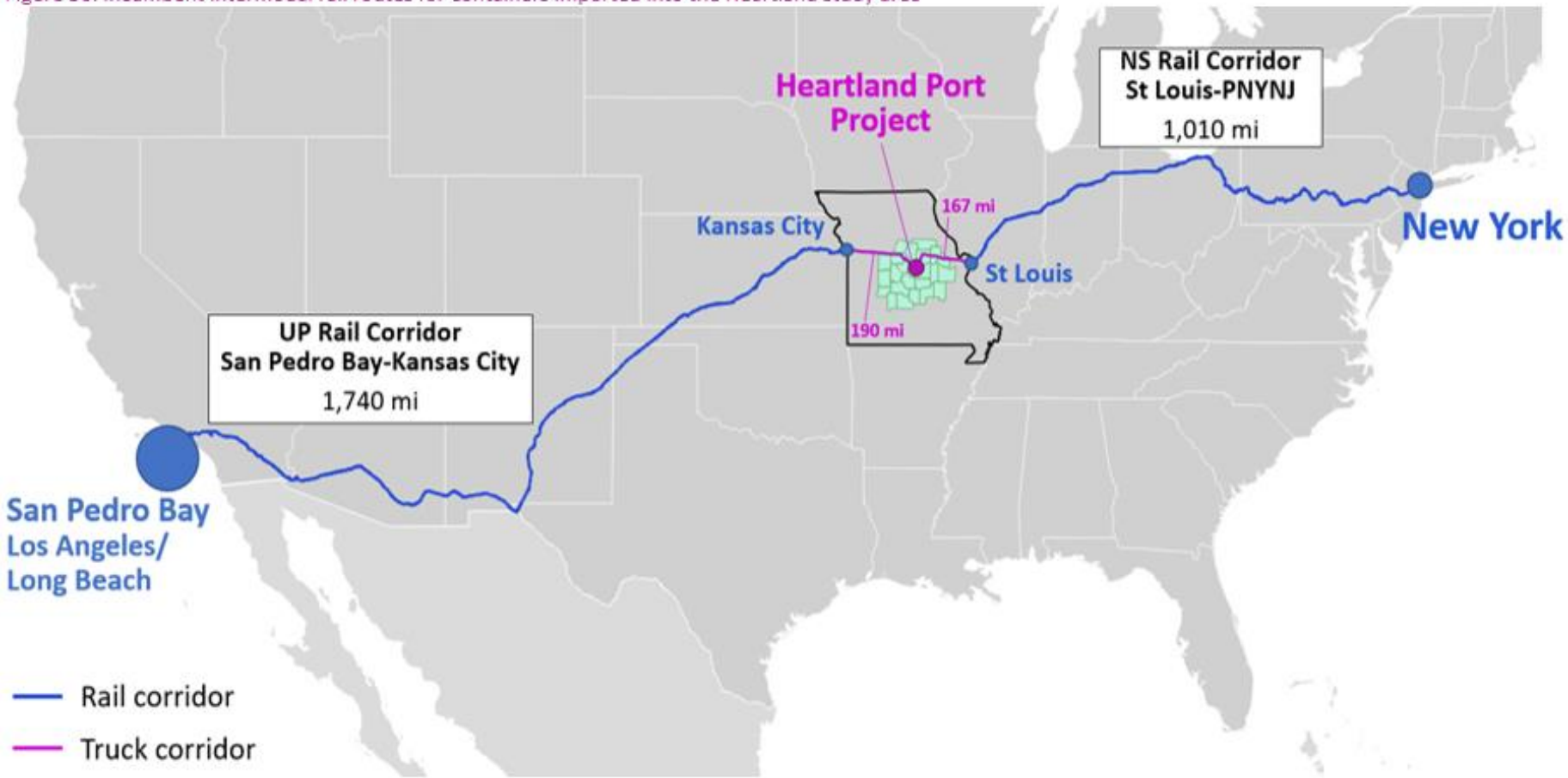
Tradelane	Unit	Best incumbent route (0-80 miles)	Heartland route cost @$6.0/MT		Potential cost savings offered by Heartland		Avg. benefit to port users (0-80 miles)
			Trade Area 1	Trade Area 2	Trade Area 1	Trade Area 2	
Asia	US$ / MT	$93.1	$85.8	$89.3	$7.3	$3.8	$5.6
Europe	US$ / MT	$64.2	$56.9	$60.3	$7.3	$3.9	$5.6
S/C America	US$ / MT	$66.5	$59.2	$62.3	$7.3	$4.2	$5.8
Mexico	US$ / MT	$82.4	$75.2	$78.3	$7.2	$4.1	$5.7
Africa	US$ / MT	$65.3	$58.1	$61.3	$7.2	$4.0	$5.6
Average	**US$ / MT**	**$74.3**	**$67.0**	**$70.3**	**$7.3**	**$4.0**	**$6.0**

- At a handling rate of **$6.0/MT** to transfer cargo from a truck to a barge at Heartland, the Heartland route would still produce an average benefit to port users of nearly **$6.00/MT**.

- This rate of **$6.0/MT** roughly apportions evenly the Heartland vs. St. Louis transportation cost savings between revenue for the port operator and benefit for shippers.

Incumbent intermodal rail routes for container imports

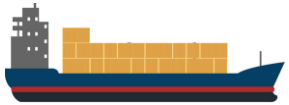
Figure 50. Incumbent intermodal rail routes for containers imported into the Heartland study area



Incumbent route costs 2020: containers

Alternative routes	Ocean transport costs	Transfer cost ship unloading	Rail loading	Intermodal rail transportation	Rail discharging	Trucking	Total cost
							
(Asia to) San Pedro Bay to Jefferson City	$1,600	$100 @San Pedro Bay	$150	$1,950 @Kansas City		$670	$4,470
(Europe to) NY-NJ to Jefferson City	$2,500	$100 @NYNJ	$150	$860 @St Louis		$590	$4,200

Heartland Port route costs: containers

Alternative routes	Ocean transport costs	Transfer cost ship unloading	Barge loading	Barge transportation	Barge discharging	Trucking	Total cost
							
(Asia to) New Orleans to Heartland Port	$2,400	$100 @New Orleans	$225	$325	$300 @Heartland	$240 T-Area 1	$3,590
						$280 T-Area 2	$3,630
(Europe to) New Orleans to Heartland Port	$2,500	$100 @New Orleans	$225	$325	$300 @Heartland	$240 T-Area 1	$3,690
						$280 T-Area 2	$3,730

Route cost comparisons—Asia & Europe

Table 20. Asia—route cost comparison: incumbent vs. new Heartland Port route (US$/, Box, 40 ft cont.)

San Pedro Bay - Jefferson City area (incumbent route)		$/Box	New Orleans - Heartland Port (new Heartland river route)	$/Box	Route cost difference	% difference
Ocean shipping	Shanghai-San Pedro Bay	$1,600	Shanghai-New Orleans	$2,400		
Linehaul port handling	at San Pedro Bay	$100	at New Orleans	$100		
Load to inland mode	Train at San Pedro Bay	$150	Barge load or discharge at New Orleans	$225		
Inland transportation	Rail San Pedro Bay-Kansas Cit	$1,950	Barge Transport New Orleans-Heartland Por	$325		
Barge port handling	n.a.	n.a.	Barge load or discharge at Heartland Port	$300		
	Subtotal	**$3,800**	**Subtotal**	**$3,350**		
Dest. trucking (T-Area 1)	Kansas City - Trade Area 1	$670	Heartland Port - Trade Area 1	$240		
Dest. trucking (T-Area 2)	Kansas City - Trade Area 2	$670	Heartland Port - Trade Area 2	$280		
Trade Area 1 (0-50 miles)	**Total cost per 40 ft containe**	**$4,470**	**Total cost per 40 ft container**	**$3,590**	**$880**	20%
Trade Area 2 (50-80 miles)	**Total cost per 40 ft containe**	**$4,470**	**Total cost per 40 ft container**	**$3,630**	**$840**	19%

- Imports from Asia—the Heartland Port route offers potential savings when compared to the rail route via San Pedro Bay – Kansas City.
- The Heartland Port river route can be between **$840 and $880 cheaper** than incumbent routes for container imports from Asia.

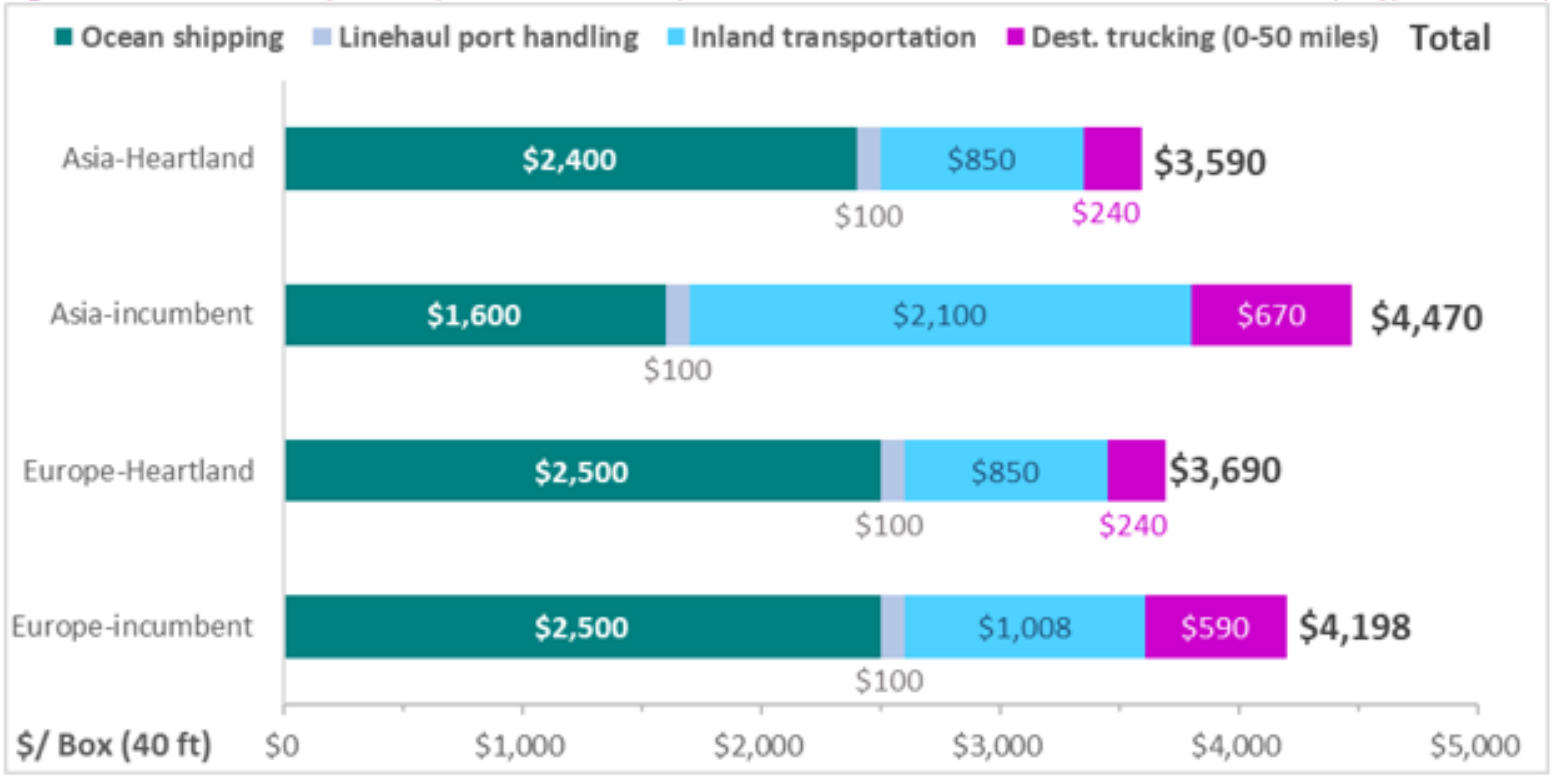
Table 21. Europe—route cost comparison: incumbent vs. new Heartland Port route (US$/Box, 40 ft cont.)

New York/New Jersey - Jefferson City area (incumbent route)		$/Box	New Orleans - Heartland Port (new Heartland river route)	$/Box	Route cost difference	% difference
Ocean shipping	Rotterdam - NYNJ	$2,500	Rotterdam-New Orleans	$2,500		
Linehaul port handling	at NYNJ	$100	at New Orleans	$100		
Load to inland mode	Train at NYNJ	$150	Barge load or discharge at New Orleans	$225		
Inland transportation	Rail NYNJ - St Louis	$860	Barge Transportation New Orleans-Heartlan	$325		
Barge port handling	n.a.	n.a.	Barge load or discharge at Heartland Port	$300		
	Subtotal	**$3,610**	**Subtotal**	**$3,450**		
Dest. trucking (T-Area 1)	St Louis - Trade Area 1	$590	Heartland Port - Trade Area 1	$240		
Dest. trucking (T-Area 2)	St Louis - Trade Area 2	$590	Heartland Port - Trade Area 2	$280		
Trade Area 1 (0-50 miles)	**Total cost per 40 ft containe**	**$4,200**	**Total cost per 40 ft container**	**$3,690**	**$510**	12%
Trade Area 2 (50-80 miles)	**Total cost per 40 ft containe**	**$4,200**	**Total cost per 40 ft container**	**$3,730**	**$470**	11%

- For imports from Europe, the Heartland Port route offers potential savings when compared to the intermodal rail via ports in New York – St Louis.
- The Heartland Port Project river route can be **between $470 and $510 cheaper** than incumbent routes for containers from Europe.

Trade area cost comparisons

Figure 54. Trade Area 1 (0-50 mi)—route cost comparison: incumbent vs new Heartland Port route (US$/40 ft cont.)



Source: Mercator International.

Route economics and target markets—key takeaways

- Underpinning the HPA is that cost savings from transporting goods via barge will be large enough to entice beneficial cargo owners (BCO's) to use this mode as opposed to transport by truck or rail *(reference: pg. 63).*
- St. Louis is expected to be the largest competitor *(reference: pg. 69)*
  - 4.2.4 premise (efficiency) and benefits and cost savings *(reference: pg. 71)*
  - 4.2.4 last paragraph --savings sufficient to attract *(reference: pg. 72)*
  - 4.2.5 Missouri's principal non-containerized trade soybeans ethanol *(reference: pg. 74)*
  - 4.3.4 Summarized route-cost comparisons *(reference: pg. 79)*
  - 4.3.5 Two major US customs ports of entry in Missouri *(reference: pg. 82)*
    - Figure 55. Map of intact intermodal volumes *(reference: pg. 84)*
  - 4.4 Base Case volume forecast summary *(reference: pg. 93)*
- Statement below Table 30… Containerized cargoes represent a complementary market for the HPA project... *(reference: pg. 94)*

5. Conceptual structure of the concession and operational model

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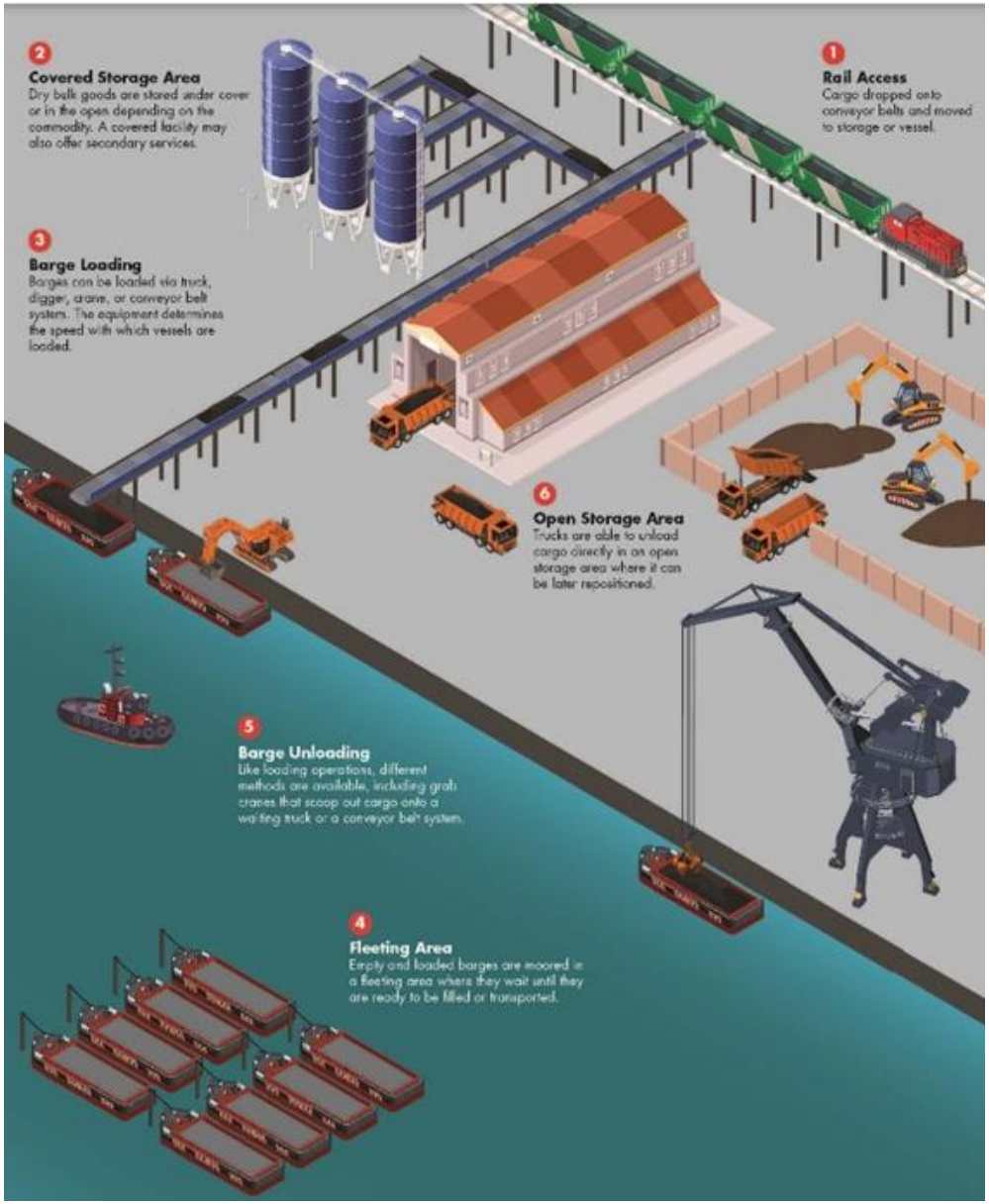
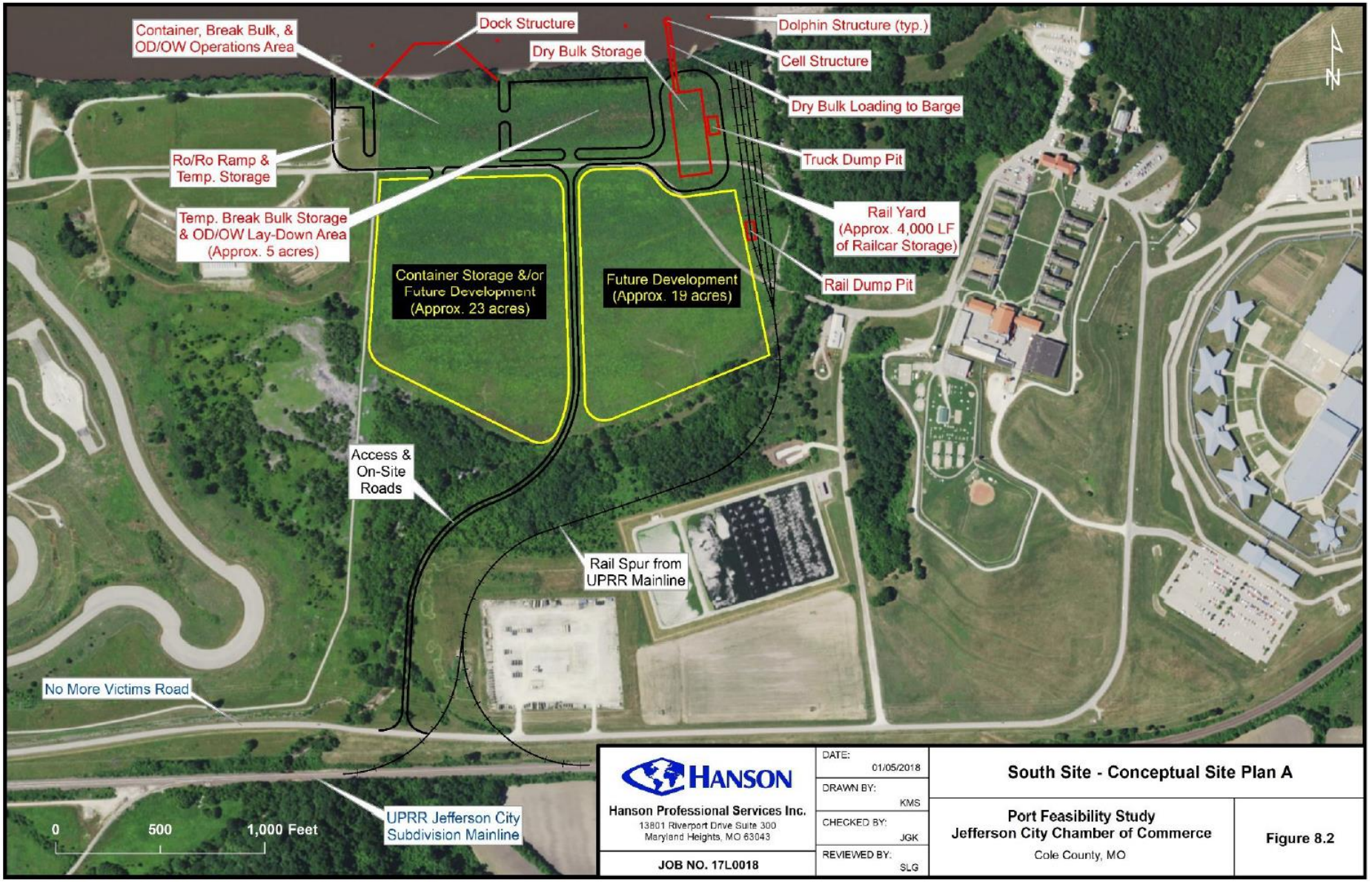
Typical elements involved in marine river terminal operations

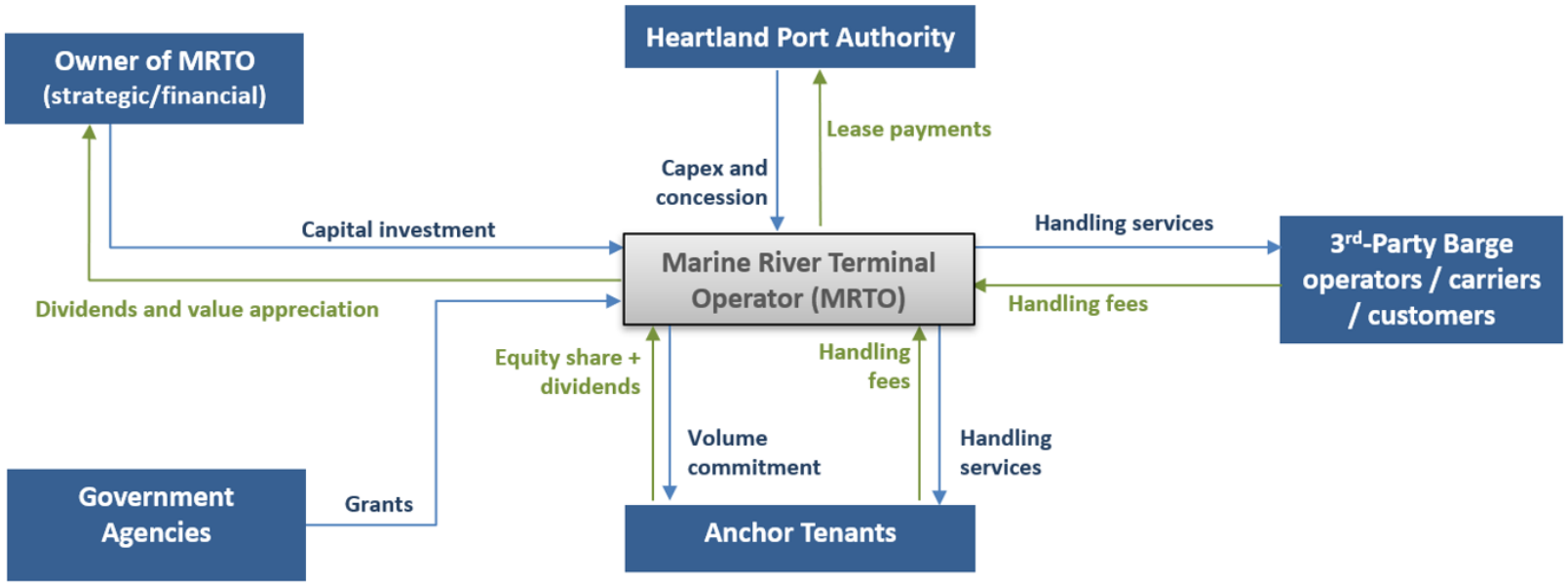


Development Opportunity A: South Site



Potential structure of the Heartland Port concession

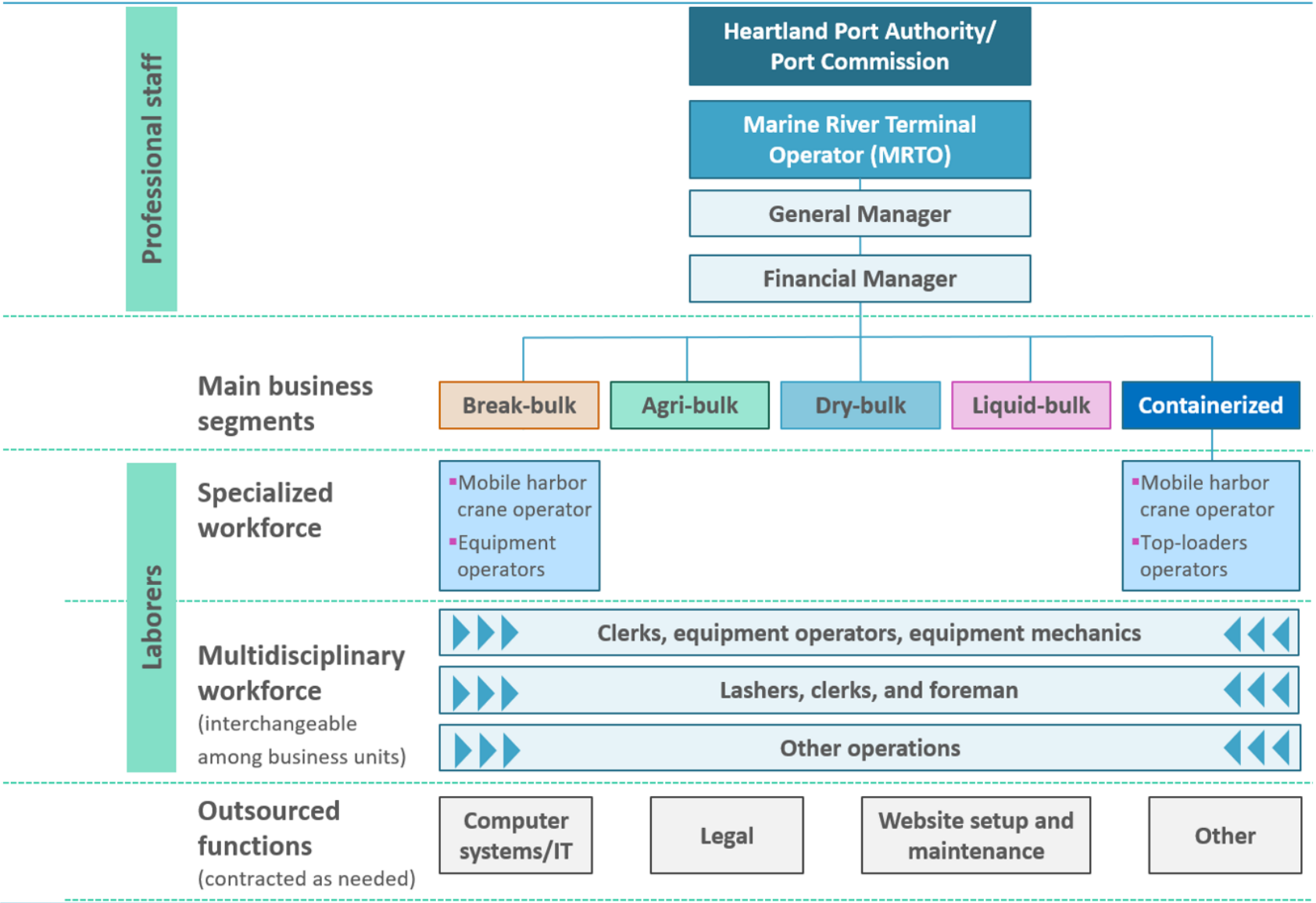
Figure 59. Potential structure of the Heartland Port concession and flow of funds



- Based on a landlord port model concept, the Heartland Port Authority/Port Commission would execute a concession agreement with an entity that would operate the Heartland Port and pay a concession fee for this right to the Port Authority.
- This entity would likely be a marine river terminal operator (MRTO), or possibly a grain trader.
- Under a shared investment concept, the Heartland Port Authority could install major infrastructure at the site to help the project be more viable and/or attract potential investors.
- Under the same concept, the concessionaire could be required to invest in specialized infrastructure, equipment, and the operational expenditures.

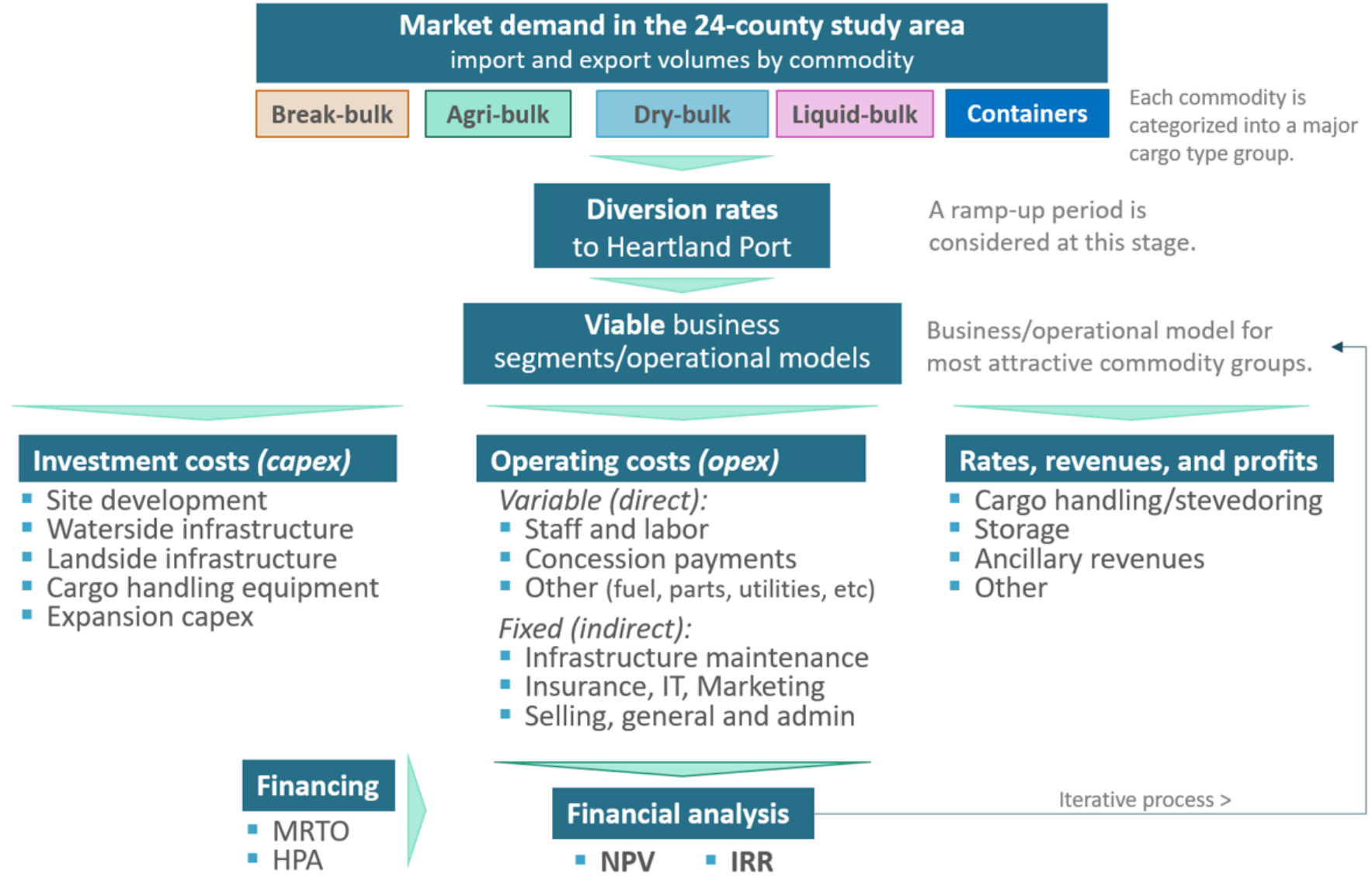
Conceptual organizational structure of the Heartland Port

Figure 60. Conceptual organizational structure of the Heartland Port



Financial modelling and scenario development tool

Figure 64. Structure of the Heartland Port Project financial model



Structure of concession and operations model: takeaways

- 5.1 To simplify feasibility…all costs made by operating entity *(reference: pg. 95)*
- 5.1 Shared investment concept: HPA could install major infrastructure *(reference: pg. 95)*
- 5.1 A combination of TIGER, TIFIA, etc. *(reference: pg. 95)*
- 5.2 Figure 59..MRTO term and organization recommendation *(reference: pg. 96)*
- 5.3 Summary port design *(reference: pg. 99-101)*
  - 5.3.2 South Site concept *(reference: pp. 102-103)*
- 6.4 Achieving success in the container sector will be critical *(reference: pg. 115)*
- 6.4.1 Table 35… and Business segments summary *(reference: pg. 116-125)*

6. Financial analysis

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Financial modeling capex

Table 31. Startup capex (Yr 0) per business segment or combination of segments modeled (million, $)

ID	Business segments operating	Min acres req.	Handling equipment and storage Yr 0	Construction and civil works in Yr 0					TOTAL startup capex Yr 0
				Roads and utilities	Mobilization, engineering, and contingency	Dock and sheet pile (container+BB)	Waterside civil works, cells, dolphins, and fill/embankment	Subtotal	
1	Container+Breakbulk (BB)	10	3.2	2.2	5.7	4.5	3.4	15.9	**$ 19.1**
2	Agribulk	3	6.9	2.2	6.0	-	1.5	9.7	**16.6**
3	Drybulk	3	4.6	2.2	4.7	-	1.5	8.4	**13.0**
4	Liquid-bulk (LB)	3	2.7	2.2	3.6	-	1.5	7.3	**10.0**
5	Cont+BB + Agribulk	13	3.2	2.2	8.8	4.5	3.5	17.1	**20.4**
6	Cont+BB + Drybulk	13	7.8	2.2	8.8	4.5	8.7	19.7	**27.5**
7	Cont+BB + Liquid-bulk	13	5.9	2.2	8.8	4.5	8.7	18.7	**24.5**
8	Cont+BB + Agribulk + Drybulk	20	14.6	2.2	8.8	4.5	10.6	26.6	**41.3**
9	Cont+BB + Agribulk + Drybulk+ LB	20	17.3	2.2	8.8	4.5	14.6	28.2	**45.4**

Financial modeling results: Base Case

Table 35. Financial modeling results: Base Case volumes (million, $)

ID	Business segments operating	Min acres req.	Eq. and storage capex Yr0	Construction Capex Yr0	Tot. startup capex Yr0	Gross revenue Yr3	Operating margin Yr3	EBITDA Yr3	Cash flow NPV	IRR %	Yrs to payback
1	Container+BB	10	(3.2)	(15.9)	(19.1)	2.9	2.3	1.8	3.6	12%	11
2	Agribulk	3	(6.9)	(9.7)	(16.6)	1.3	1.1	0.6	(7.8)	-2%	N/A
3	Drybulk	3	(4.6)	(8.4)	(13.0)	0.2	0.2	(0.2)	(10.1)	0%	N/A
4	Liquid-bulk	3	(2.7)	(7.3)	(10.0)	0.0	0.0	(0.3)	(9.7)	0%	N/A
5	Cont+BB + Agribulk	13	(10.1)	(21.1)	(31.1)	4.2	3.3	2.7	1.7	10%	13
6	Cont+BB + Drybulk	13	(7.8)	(19.7)	(27.5)	3.2	2.5	2.0	(0.6)	9%	15
7	Cont+BB + Liquid-bulk	13	(5.9)	(18.7)	(24.5)	2.9	2.3	1.8	(0.2)	9%	14
8	Cont+BB + Agribulk+ Drybulk	20	(14.6)	(26.6)	(41.3)	4.5	3.5	2.9	(3.8)	8%	16
9	Cont+BB + Agribulk+ Drybulk+ LB	20	(17.3)	(28.2)	(45.4)	4.5	3.6	2.9	(6.7)	7%	17

- The outputs of the financial model for the two most attractive scenarios **Cont+BB** and **Cont+BB+Agribulk** show a cash flow NPV of **$3.6 million** and **$1.7 million,** respectively.
- Although the returns from the project are not likely to be attractive to an institutional investor (max IRR between 12-10% based on a 50/50 debt/equity ratio), this project might be attractive to a strategic player who could capture non-financial benefits in the region.

Financial analysis details: container & breakbulk

Figure 69. Summary outputs from the financial model: 1–Container and breakbulk (cont+BB)

Business segments being modeled	
Breakbulk	Yes
Agribulk	No
Drybulk	No
Liquid bulk	No
Container	Yes
Dock modeled (200 ft):	Yes
Fill/embank. acres modeled	10 acres

Inputs in P&L_CF

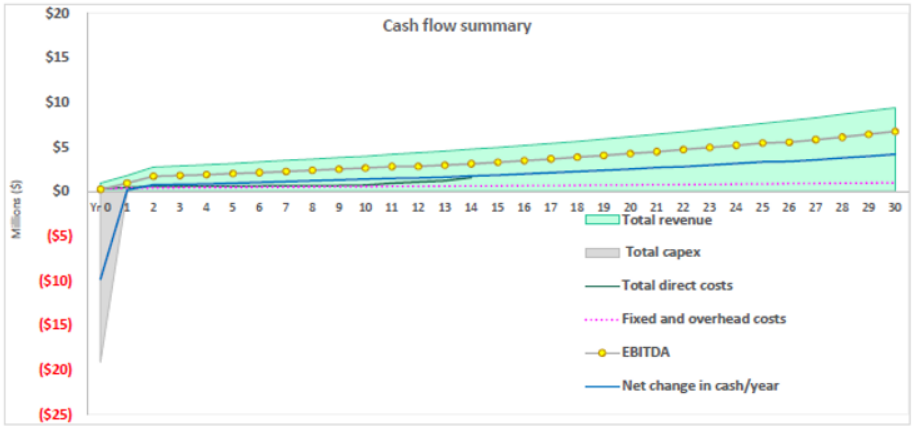
	Discount rate	EBITDA NPV	Cash Flow NPV
Discotuned at WACC	9.5%	$24.0	$3.6
		IRR	12.4%

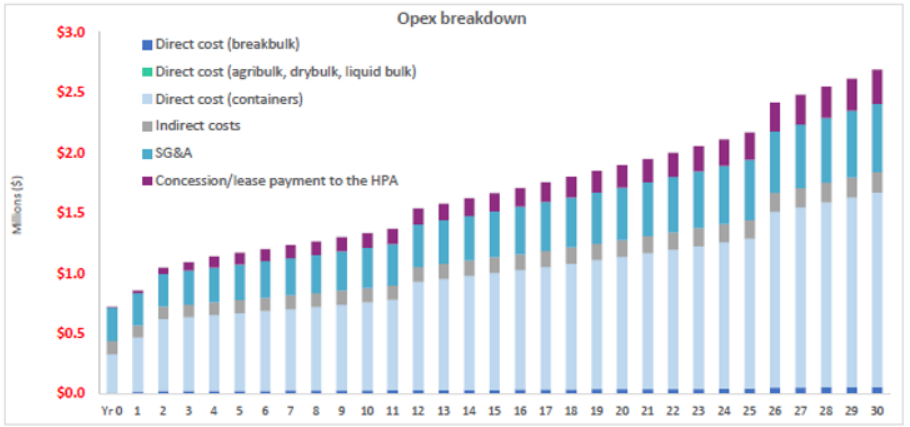
Total startup capex Yr 0	(19.1)
Return on total assets	126%
No of yrs w positive cash flow	30
Years to payback	11

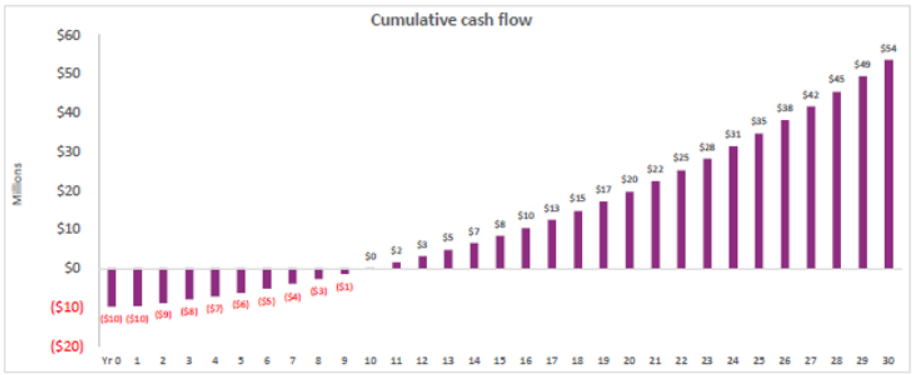
million US$

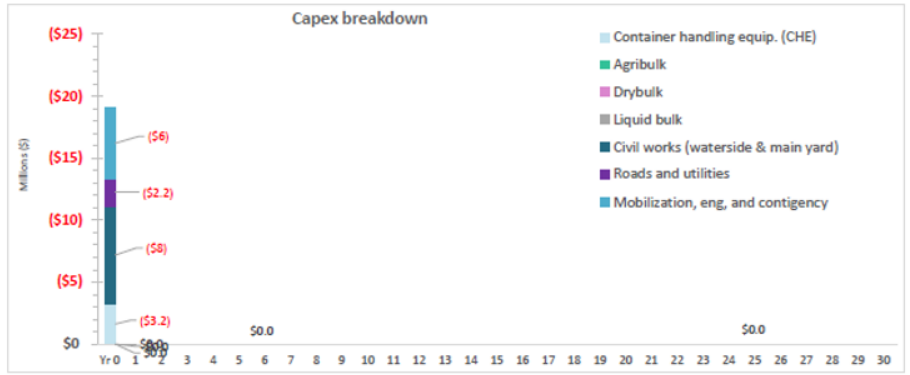
Outputs of business segments modeled	
Gross revenue Yr 3	$2.91
Total margin Yr 3	2.27
EBITDA Yr 3	1.82
Capex Yr 0	
Related to indiv. busnss segments	(3.2)
Related to overall project	(15.9)
Total startup capex Yr 0	(19.1)
Project subsidy Yr 0	0.0

million US$









Financial analysis details: agribulk

Figure 70. Summary outputs from the financial model: 2–Agribulk

Business segments being modeled	
Breakbulk	No
Agribulk	Yes
Drybulk	No
Liquid bulk	No
Container	No
Dock modeled (200 ft):	No
Fill/embank. acres modeled	3 acres

Inputs in P&L_CF

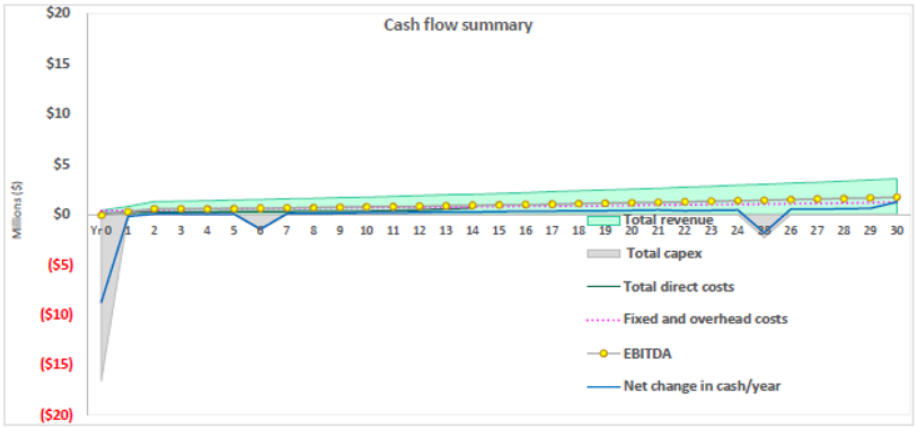
	Discount rate	EBITDA NPV	Cash Flow NPV
Discotuned at WACC	9.5%	$6.7	($7.8)
		IRR	-2.1%

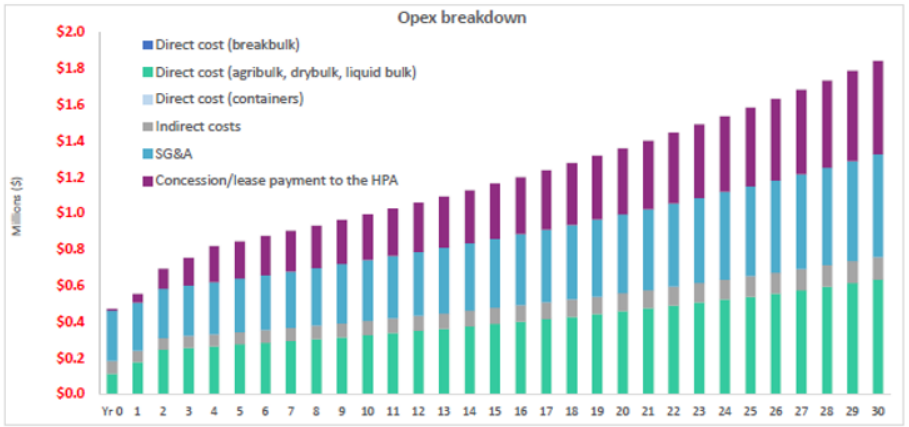
Total startup capex Yr 0	(16.6)
Return on total assets	40%
No of yrs w positive cash flow	27
Years to payback	N/A

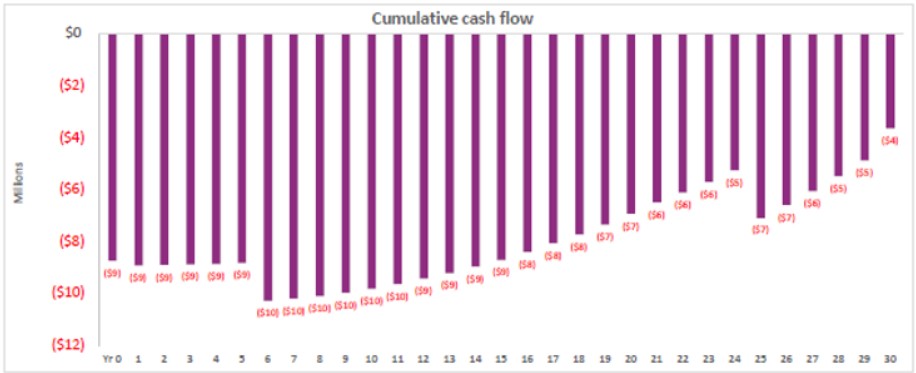
million US$

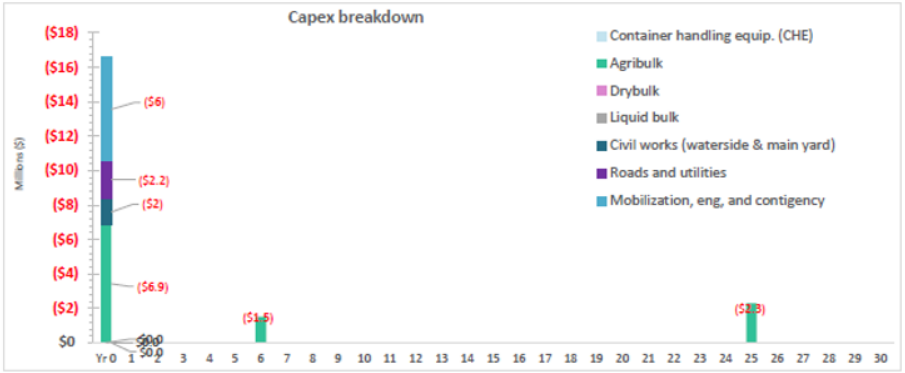
Outputs of business segments modeled	
Gross revenue Yr 3	$1.32
Total margin Yr 3	1.07
EBITDA Yr 3	0.57
Capex Yr 0	
Related to indiv. busnss segments	(6.9)
Related to overall project	(9.7)
Total startup capex Yr 0	(16.6)
Project subsidy Yr 0	0.0

million US$









Financial analysis details: container, breakbulk, & agribulk

Figure 73. Summary outputs from the financial model: 5–Cont+BB+Agribulk

Business segments being modeled	
Breakbulk	Yes
Agribulk	Yes
Drybulk	No
Liquid bulk	No
Container	Yes
Dock modeled (200 ft):	Yes
Fill/embank. acres modeled	13 acres

Inputs in P&L_CF

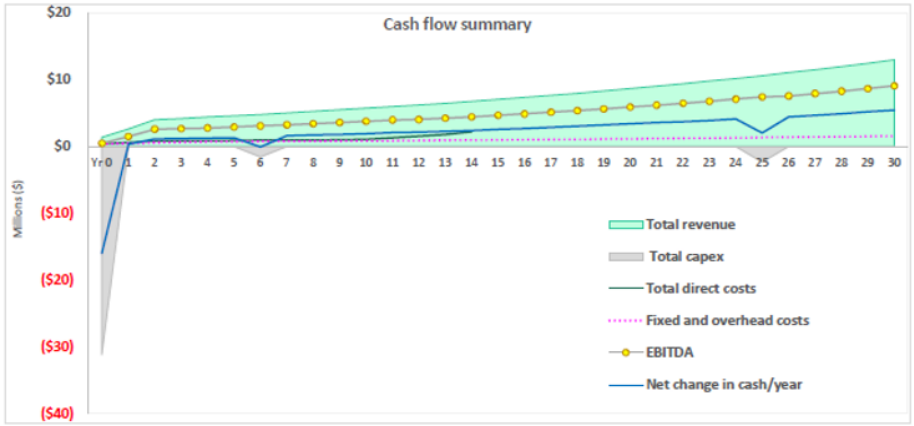
	Discount rate	EBITDA NPV	Cash Flow NPV
Discotuned at WACC	9.5%	$34.4	$1.7
		IRR	10.4%

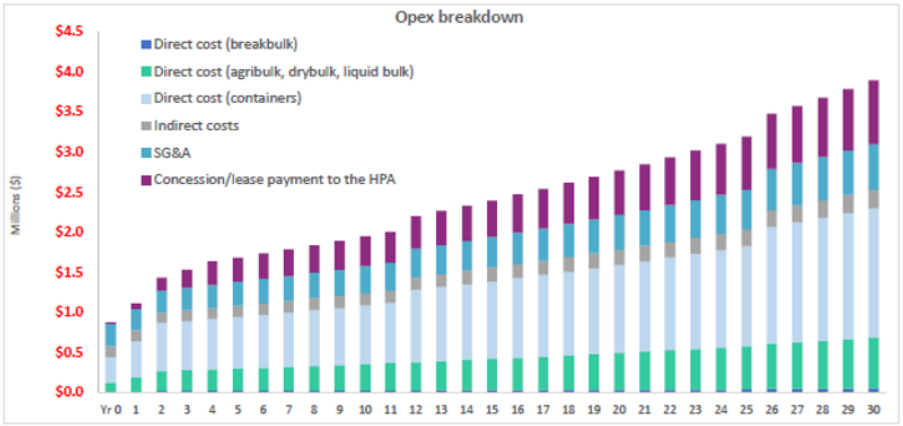
Total startup capex Yr 0	(31.1)
Return on total assets	110%
No of yrs w positive cash flow	29
Years to payback	13

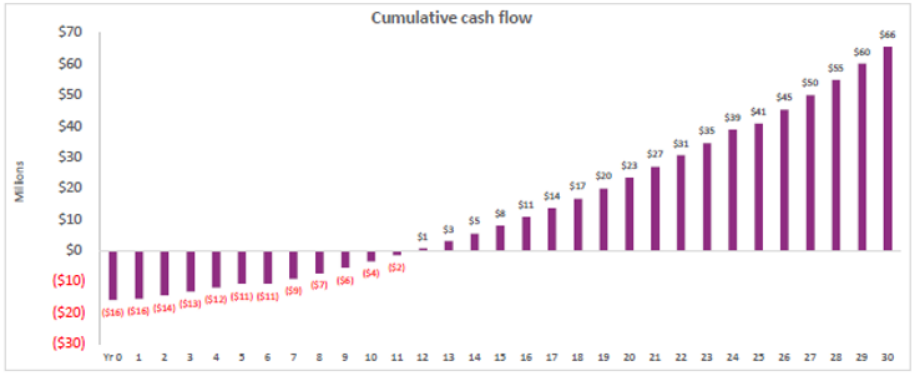
million US$

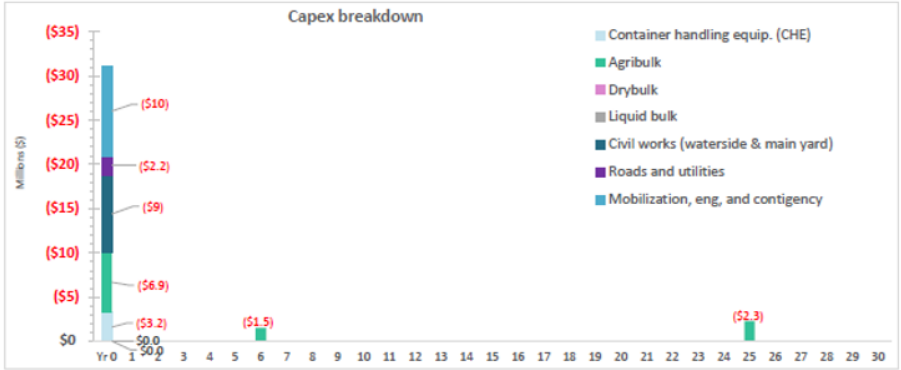
Outputs of business segments modeled	
Gross revenue Yr 3	$4.23
Total margin Yr 3	3.34
EBITDA Yr 3	2.70
Capex Yr 0	
Related to indiv. busnss segments	(10.1)
Related to overall project	(21.1)
Total startup capex Yr 0	(31.1)
Project subsidy Yr 0	0.0

million US$









Financial analysis: key takeaways

- Containerized cargo handling could be viable and is responsible for most of the value generated under the scenarios evaluated.

- Assuming the Base Case volumes, the outputs of the financial model for the two most attractive scenarios Cont+BB and Cont+BB+Agribulk show an NPV of the project cash flows of $3.6 million and $1.7 million, respectively.

- Agribulk might turn into positive territory under more refined assumptions.
  - For instance, changes in the capital structure of the project, further capex refinements based on an actual engineering design/analysis, consideration of further value-adding activities onsite might generate additional revenues worthy of consideration for the overall project.

- Because moving freight by water is the least expensive and more environmentally friendly of all transportation modes, there are societal benefits that can stem for a project of this nature that could not be captured by a private investor.

- As demonstrated by the *2018 Central Missouri Multimodal Port Feasibility Study* aggregate economic benefits and direct impacts include freight transportation costs savings, freight emission cost savings, safety cost savings, state of good repair cost savings, and job creation that exceed $200 million in the Boone, Callaway, Cole, and Osage Counties.

7. Environmental regulatory requirements

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Environmental regulatory requirements

- **National Environmental Policy Act (NEPA)**
- **The Council on Environmental Quality (CEQ)**
- **Clean Water Act of 1972 (CWA)**
- **The U.S. Army Corps of Engineers (USACE)**
  - Federal Safe Drinking Water Act, Missouri Safe Drinking Water Act
  - Clean Air Act of 1963
  - Air construction permits / new source review permits
- **Section 106 Tribal Land and Consultation**
  - The Archeological Historic Preservation Act of 1970
  - National Historic Preservation Act of 1966
- **Section 7 Fish and Wildlife Service Endangered Species Act**
  - Endangered Species Act of 1973
  - Migratory Bird Treaty Act (MBTA)
  - Fish and Wildlife Coordination Act
- **Wetlands and floodplain management**
- **Missouri Department of Natural Resources (DNR)**
  - Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)
  - Resource Conservation and Recovery Act (RCRA)
  - Missouri Hazardous Waste Management Law
  - Toxic Substance and Control Act (TSCA)
  - Missouri Soil Conservation Section 278
  - Missouri Solid Waste Management Law
- **Missouri Conservation Department**
- **Executive Order 12898: Environmental Justice in Minority and Low-Income Populations**

National Environmental Policy Act (NEPA) and EIS

Figure 78. EIS process

Source: NSDOT.

Table 36. EIS Process

Notice	The public is notified that the agency is preparing an EIS. The agency provides the public with information regarding how they can become involved in the process. The agency announces its project proposal with notices in the Federal Register, local media, and letters to citizens and groups that it knows are likely to be interested. Citizens and groups are welcome to send in comments helping the agency identify the issues it must address in the EIS (or EA).
Scoping, purpose, and need	The public scoping process is an early and open phase in the EIS process intended to provide interested or affected parties an opportunity to express concerns, ideas, and comments, which will inform/identify the issues and alternatives analyzed in the EIS document. The first meetings are held to discuss existing laws, the available information, and the research needed. The tasks are divided up and a lead group is selected. Decision makers and all those involved with the project should attend the meetings. At this stage the following questions must be answered: ▪ What is the purpose of this project? ▪ What is the goal trying to be achieved? ▪ Why is this project needed? ▪ What are the critical issues, resources, and impacts to be considered?
Project Alternatives	This stage must be informed by the information collected during the scoping process of the EIS. At this stage the following questions must be answered: ▪ What alternatives will be looked at in the EIS? ▪ No action alternative ▪ Proposed action, and ▪ A reasonable range of alternatives.
Affected Environment	This stage must aim to identify the potential environment to be affected by each of the alternatives. At this stage, the agency must conduct reasonable efforts to define the baseline conditions of the human environment that could potentially be affected and the anticipated environmental consequences. That is, defining how will building, operating, and maintaining this project could potentially affect those baseline conditions of the human environment.
Draft EIS (DEIS)	Based on both agency expertise and issues raised by the public, the agency prepares a Draft EIS with a full description of the affected environment, a reasonable range of alternatives, and an analysis of the impacts of each alternative.
Comment	Affected individuals then have the opportunity to provide feedback through written and public hearing statements. Formal comments for the EIS can be recorded multiple ways: ▪ Submit comment cards and letters during scoping meetings and by mail to the USACE ▪ Direct comments during public hearings (which must be recorded by the lead agency or the project sponsor) ▪ Construct and circulate a project website explaining the project, the EIS process, and soliciting public feedback.
Final EIS (FEIS) and Proposed Action	Based on the comments on the *Draft EIS*, the agency writes a *Final EIS*, and announces its Proposed Action. The public is not invited to comment on this, but if they are still unhappy, or feel that the agency has missed a major issue, they may protest the EIS to the Director of the agency. The Director may either ask the agency to revise the EIS.
Record of Decision (ROD)	Once all the protests are resolved the agency issues a Record of Decision which is its final action prior to implementation. If members of the public are still dissatisfied with the outcome, they may sue the agency in Federal court.
Supplemental EIS (SEIS)	Typically prepared after either a *Final EIS* or *Record of Decision* has been issued and new environmental impacts that were not considered in the original EIS are discovered, requiring the lead agency to re-evaluate its initial decision and consider new alternatives to avoid or mitigate the new impacts. Supplemental EISs are also prepared when the size and scope of a federal action changes, or when all of the proposed alternatives in an EIS are deemed to have unacceptable environmental impacts and new alternatives are proposed.

Overall summary & key takeaways

- If the necessary conditions for supporting containerized cargo flows to Jefferson City are in place, containerized cargo handling could be viable and is responsible for most of the value generated under the scenarios evaluated.

- Assuming the *Base Case volumes*, the outputs of the financial model for the two most attractive scenarios **Cont+BB** and **Cont+BB+Agribulk** show an NPV of the project cash flows of **$3.6 million** and **$1.7 million**, respectively, after considering capex, interest, taxes, depreciation, and amortization for these two business segments.

- Although the returns from the project would not be attractive to an institutional investor, (IRR of 10% based on a 50/50 debt/equity ratio) this project might be attractive to a strategic player who could capture non-financial benefits.

- There are societal benefits that can stem for a project of this nature that could not be captured by a private investor.

- The proposed multimodal port would help to enhance the economic environment for traded and non-traded sector businesses in central Missouri by improving the cost of doing business in the region.

- Heartland Port Authority could work with state and regional EconDev agencies to develop a targeted plan to attract businesses to the port, while funding assistance is procured.

- Once funding assistance is secured, the attractiveness of this project for a private investor can be expected to increase substantially.

Questions?

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