

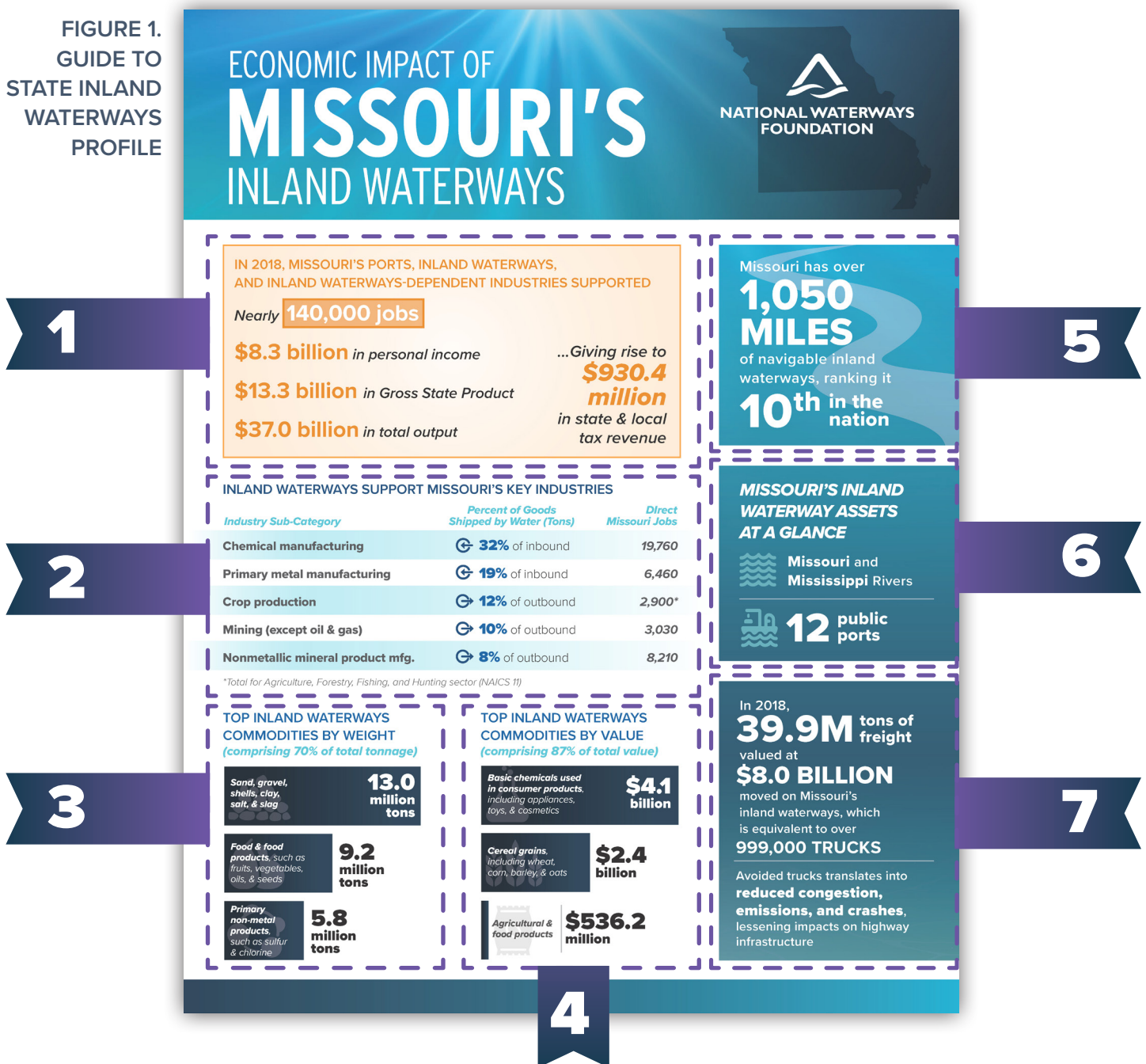
# Methodology for Developing National Waterways Foundation Inland Waterways State Profiles



This document describes the methodology used to develop the 17 state inland waterways profiles. **Figure 1** breaks down each element on the front page, numbered from one to seven, and the following sections provides detail for each corresponding element for the inland states, states with access to coastal ports, and states with access to Great Lakes ports.

The second page of the profiles are identical for all 17 states, and includes facts & figures that are individually sourced from published studies and reports.

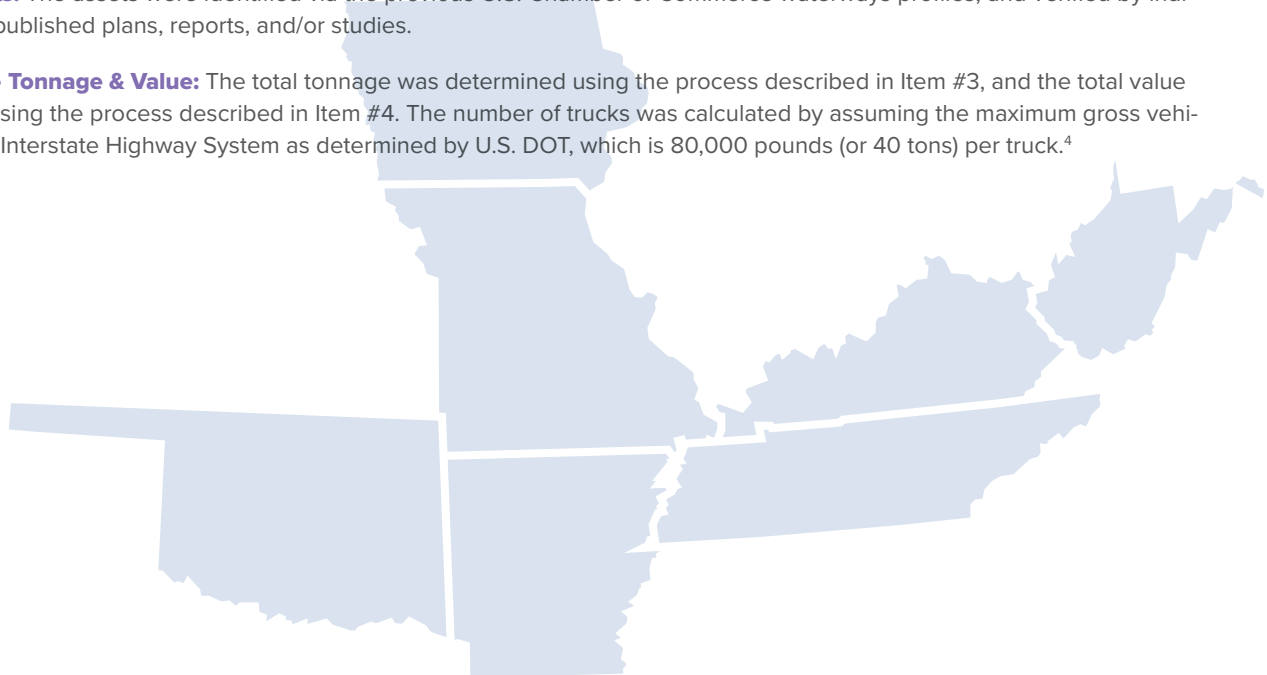
**FIGURE 1.**  
GUIDE TO  
STATE INLAND  
WATERWAYS  
PROFILE



# METHODOLOGY FOR INLAND STATES: ARKANSAS, IOWA, KENTUCKY, MISSOURI, OKLAHOMA, TENNESSEE, AND WEST VIRGINIA

- 1. Economic Impact:** The economic impact assessment estimates how much each state's inland waterways, ports, and inland waterways-dependent industries (described in Item #2) contributed to that state's economy in 2018 in terms in jobs, personal income, Gross State Output, total output, and state & local tax revenue. This was done via the following steps:
  - a. Estimate the number of jobs and annual wages for the state's **inland waterways-dependent industries** using U.S. Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages data for 2018;
  - b. Estimate the number of jobs and annual wages for the state's **ports and waterway sectors** using BLS data; and
  - c. Input the employment and wages data derived from steps 1.a. and 1.b. into the IMPLAN economic model to calculate the total economic impacts in terms of in jobs, personal income, Gross State Output, total output, and state & local tax revenue.
- 2. Inland Waterways-Dependent Industries:** Inland waterways-dependent industries are defined as those that ship a high proportion of inputs and outputs via water as opposed to truck, rail, and air modes. These industries were selected using the Federal Highway Administration (FHWA) Freight Analysis Framework (FAF)<sup>1</sup> 2018 data, which provides estimates for tonnage and value by regions of origin and destination, commodity type, and mode. Using this data, we calculated the mode share of waterborne traffic in each state. Then, we used a crosswalk (developed by CS) to convert tonnage by commodity to tonnage by industry, which is reported using North American Industry Classification System (NAICS)<sup>2</sup> codes.

Industries with relatively high modal share are classified as inland waterways-dependent industries. Industries are shown at the 3-digit NAICS level and include the proportion of inbound/outbound waterborne tonnage and number of state jobs.
- 3. Top Commodities by Weight:** The top waterways commodities by weight were determined using the U.S. Army Corps of Engineers (USACE) Waterborne Commerce Statistics Center state-to-state commodity movements data for 2018. This dataset provides waterways tonnage estimates by origin/destination and commodity group. The state profiles feature the top 3 commodities by weight.
- 4. Top Commodities by Value:** Because the USACE does not provide value estimates, the top waterways commodities by value were determined using the FAF data. The state profiles feature the top 3 commodities by value for 2018.
- 5. Waterways Mileage:** Mileage and national ranking were determined by reviewing USACE summary data<sup>3</sup> and individual state DOT published plans, reports, and/or studies.
- 6. Waterways Assets:** The assets were identified via the previous U.S. Chamber of Commerce waterways profiles, and verified by individual state DOT published plans, reports, and/or studies.
- 7. Total Waterborne Tonnage & Value:** The total tonnage was determined using the process described in Item #3, and the total value was determined using the process described in Item #4. The number of trucks was calculated by assuming the maximum gross vehicle weight for the Interstate Highway System as determined by U.S. DOT, which is 80,000 pounds (or 40 tons) per truck.<sup>4</sup>



<sup>1</sup> More information about FAF is available here: [https://ops.fhwa.dot.gov/freight/freight\\_analysis/faf/](https://ops.fhwa.dot.gov/freight/freight_analysis/faf/)

<sup>2</sup> More information about NAICS codes is available here: <https://www.census.gov/smallbusiness/html/naics.html>

<sup>3</sup> Available via the U.S. Bureau of Transportation Statistics website: <https://www.bts.gov/content/inland-waterway-mileage>

<sup>4</sup> <https://ops.fhwa.dot.gov/freight/sw/overview/index.htm>

# METHODOLOGY FOR COASTAL STATES: ALABAMA, LOUISIANA, MISSISSIPPI, AND TEXAS

- 1. Economic Impact:** Estimates how much each state's inland waterways, ports, and inland waterways-dependent industries (described in Item #2) contributed to that state's economy in 2018 in terms in jobs, personal income, Gross State Output, total output, and state & local tax revenue. This was done via the following steps:
  - Estimate the number of jobs and annual wages for the state's **inland waterways-dependent industries** using BLS Quarterly Census of Employment and Wages data for 2018, adjusted by the total percentage of people residing in inland vs. coastal counties (see breakdown in Item #2) as determined by U.S. Census county-level population estimates;
  - Estimate the number of jobs and annual wages for the state's **ports and waterway sectors** using BLS data, adjusted by the total percentage of people residing in inland vs. coastal counties (see breakdown in Item #2); and
  - Input the employment and wages data derived from steps 1.a. and 1.b. into the IMPLAN economic model to calculate the total economic impacts in terms of in jobs, personal income, Gross State Output, total output, and state & local tax revenue.
- 2. Inland Waterways-Dependent Industries:** Inland waterways-dependent industries are defined as those that ship a high proportion of inputs and outputs via water as opposed to truck, rail, and air modes. These industries were selected using the FAF 2018 data, which provides estimates for tonnage and value by regions of origin and destination, commodity type, and mode. For each state, we removed any FAF Zone from the analysis that included coastal ports, detailed as follows:
  - Alabama – excludes Mobile FAF Zone.<sup>5</sup>
  - Louisiana – excludes New Orleans and Lake Charles FAF Zones.<sup>6</sup>
  - Texas – excludes Houston, Corpus Christi, and Beaumont FAF Zones.<sup>7</sup>
  - Mississippi – only one FAF Zone exists for this state so it is not possible to further refine.<sup>8</sup>

Using this data, we calculated the mode share of waterborne traffic in each state. Then, we used a crosswalk to convert tonnage by commodity to tonnage by industry, reported using NAICS codes.

Industries with relatively high modal share are classified as inland waterways-dependent industries. Industries are shown at the 3-digit NAICS level and include the proportion of inbound/outbound waterborne tonnage and number of state jobs.

- 3. Top Commodities by Weight:** The top waterways commodities by weight were determined using data requested directly from the USACE. This dataset provided waterways tonnage estimates by origin/destination, commodity group, and traffic type, which identifies whether the tonnage flowed to/from ports on the inland waterways, coastal waterways, or the Great Lakes (as applicable). This assessment included inland waterways (known as “internal”) flows only. The state profiles feature the top 3 commodities by weight for 2018.
- 4. Top Commodities by Value:** The top waterways commodities by value were determined using the FAF data. The profiles feature the top 3 commodities by value for 2018.
- 5. Waterways Mileage:** Mileage and national ranking were determined by reviewing USACE summary data and individual state DOT published plans, reports, and/or studies.
- 6. Waterways Assets:** The assets were identified via the previous U.S. Chamber of Commerce waterways profiles, and verified by individual state DOT published plans, reports, and/or studies.
- 7. Total Waterborne Tonnage & Value:** The total tonnage was determined using the process described in Item #3, and the total value was determined using the process described in Item #4. The number of trucks was calculated by assuming the maximum gross vehicle weight for the Interstate Highway System as determined by U.S. DOT (80,000 pounds per truck).

<sup>5</sup> Alabama counties removed include: Baldwin and Mobile.

<sup>6</sup> Louisiana parishes removed include: Calcasieu, Cameron, Jefferson, Orleans, Plaquemines, St. Bernard, St. Charles, St. James, St. John the Baptist, St. Tammany, Tangipahoa, and Washington.

<sup>7</sup> Texas counties removed: Aransas, Austin, Brazoria, Chambers, Fort Bend, Galveston, Hardin, Harris, Jefferson, Jim Wells, Kenedy, Kleberg, Liberty, Matagorda, Montgomery, Newton, Nueces, Orange, San Patricio, Trinity, Walker, Waller, Washington, and Wharton.

<sup>8</sup> For the purpose of estimating employment and wages for the inland waterways-dependent industries, the following Mississippi counties were excluded from the analysis of the U.S. Census CBP data: Marion, Lamar, Forrest, Perry, Greene, Pearl River, Stone, George, Hancock, Harrison, and Jackson.

# METHODOLOGY FOR GREAT LAKES STATES: MINNESOTA, WISCONSIN, ILLINOIS, INDIANA, OHIO, AND PENNSYLVANIA

- Economic Impact:** Estimates how much each state's inland waterways, ports, and inland waterways-dependent industries (described in Item #2) contributed to that state's economy in 2018 in terms in jobs, personal income, Gross State Output, total output, and state & local tax revenue. This was done via the following steps:
  - Estimate the number of jobs and annual wages for the state's **inland waterways-dependent industries** using BLS Quarterly Census of Employment and Wages data for 2018, adjusted by the total percentage of people residing in inland vs. lakewise counties (see breakdown in Item #2) as determined by U.S. Census county-level population estimates;
  - Estimate the number of jobs and annual wages for the state's **ports and waterway sectors** using BLS data, adjusted by the total percentage of people residing in inland vs. lakewise counties (see breakdown in Item #2); and
  - Input the employment and wages data derived from steps 1.a. and 1.b. into the IMPLAN economic model to calculate the total economic impacts in terms of in jobs, personal income, Gross State Output, total output, and state & local tax revenue.
- Inland Waterways-Dependent Industries:** Inland waterways-dependent industries are defined as those that ship a high proportion of inputs and outputs via water as opposed to truck, rail, and air modes. These industries were selected using the FAF 2018 data, which provides estimates for tonnage and value by regions of origin and destination, commodity type, and mode. For each state, we removed any FAF Zone from the analysis that included Great Lakes ports, detailed as follows:
  - Illinois – excludes Chicago FAF Zone.<sup>9</sup>
  - Indiana – excludes Chicago (IN) FAF Zone.<sup>10</sup>
  - Minnesota – does not feature a FAF Zone specific to Great Lakes counties.<sup>11</sup>
  - Ohio – excludes the Cleveland FAF Zone, plus additional Great Lakes Counties associated with Ohio ports.<sup>12</sup>
  - Pennsylvania – does not feature a FAF Zone specific to Great Lakes counties.<sup>13</sup>
  - Wisconsin – excludes the Milwaukee FAF Zone, plus additional Great Lakes counties associated with Wisconsin ports.<sup>14</sup>

Using this data, we calculated the mode share of waterborne traffic in each state. Then, we used a crosswalk to convert tonnage by *commodity* to tonnage by *industry*, which is reported using NAICS codes.

Industries with relatively high modal share are classified as inland waterways-dependent industries. Industries are shown at the 3-digit NAICS level and include the proportion of inbound/outbound waterborne tonnage and number of state jobs.

- Top Commodities by Weight:** The top waterways commodities by weight were determined using data requested directly from the USACE. This dataset provides waterways tonnage estimates by origin/destination, commodity group, and traffic type, which identifies whether the tonnage flowed to/from ports on the inland waterways, coastal waterways, or the Great Lakes (as applicable). This assessment included inland waterways (known as “internal”) flows only. The profiles feature the top 3 commodities by weight for 2018.
- Top Commodities by Value:** The top waterways commodities by value were determined using the FAF data. The profiles feature the top 3 commodities by value for 2018.
- Waterways Mileage:** Mileage and national ranking were determined by reviewing USACE summary data and individual state DOT published plans, reports, and/or studies.
- Waterways Assets:** The assets were identified via the previous U.S. Chamber of Commerce waterways profiles, and verified by individual state DOT published plans, reports, and/or studies.
- Total Waterborne Tonnage & Value:** The total tonnage was determined using the process described in Item #3, and the total value was determined using the process described in Item #4. The number of trucks was calculated by assuming the maximum gross vehicle weight for the Interstate Highway System as determined by U.S. DOT (80,000 pounds per truck).

<sup>9</sup> Illinois counties removed include: McHenry, Grundy, Kankakee, Kane, Will, Kendall, Lake, Cook, DuPage, and DeKalb. However, because the Port of Chicago/IIPD handles a significant amount of inland waterways traffic, we reduced the statewide job numbers by 60% instead of 31.5% to capture a greater share of the state's workforce that would be supported by the inland waterways.

<sup>10</sup> Indiana counties removed include: Newton, Jasper, Lake, Porter, and LaPorte.

<sup>11</sup> For the purpose of estimating employment and wages for the inland waterways-dependent industries, the following Minnesota counties were excluded from the analysis of the U.S. Census CBP data: St. Louis, Cook, Lake, and Carlton.

<sup>12</sup> Ohio counties removed include: Geauga, Lorain, Summit, Cuyahoga, Portage, Medina, Ashtabula, Lake, Erie, Ottawa, Lucas, Sandusky, Huron, and Wood.

<sup>13</sup> For the purpose of estimating employment and wages for the inland waterways-dependent industries, the following Pennsylvania counties were excluded from the analysis of the U.S. Census CBP data: Crawford and Erie.

<sup>14</sup> Wisconsin counties removed include: Washington, Racine, Waukesha, Ozaukee, Milwaukee, Ashland, Douglas, Iron, Bayfield, Manitowoc, Kewaunee, Calumet, Brown, Sheboygan, Oconto, Door, Marinette, and Kenosha.