FTOT 2024.2

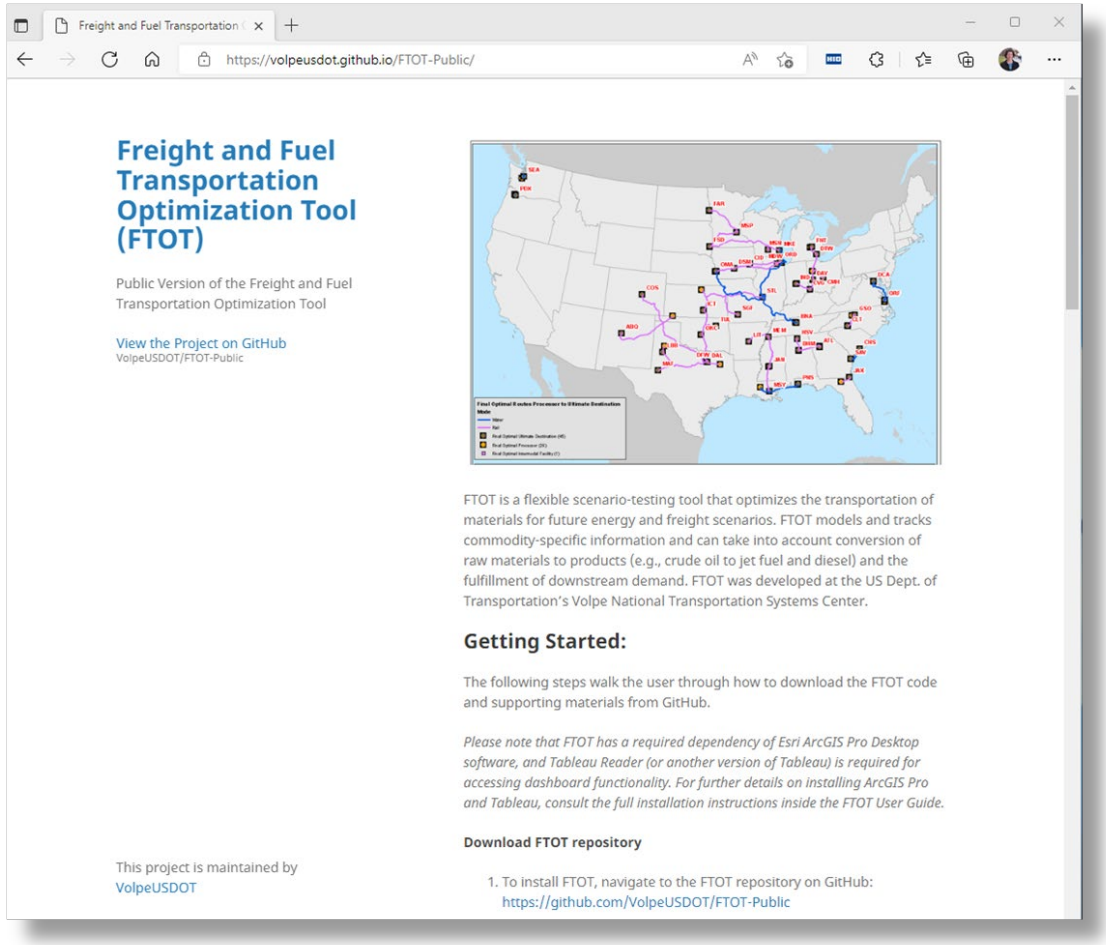
Users Group Meeting

August 2, 2024

FTOT Landing Page

Download the latest release:
volpeusdot.github.io/FTOT-Public

- FTOT is an open-source tool available on GitHub.
- Includes full documentation and “Quick Start” scenarios, default datasets, video tutorials.
- Updated versions released quarterly.
- Issues / bugs / requests can be raised on GitHub site.
- We welcome feedback and suggestions, additional projects, collaborations.
- Email FTOT-Team@dot.gov.



Agenda

- 2024.2 Release
  - Cost reporting
    - New costs CSV report
    - New Cost Breakdown dashboard in Tableau workbook
  - Updated cost methodology for multimodal movements
  - Added scenario input validation checks
  - Other updates
    - Flexible link attribute handling with ArcGIS and NetworkX
    - Logging message bug fix
- 2024.2.1 Patch
  - FTOT setup and Python environment
- Roundtable: Candidate generation scenarios
- Case study: Maritime biofuels in the Port of Seattle region

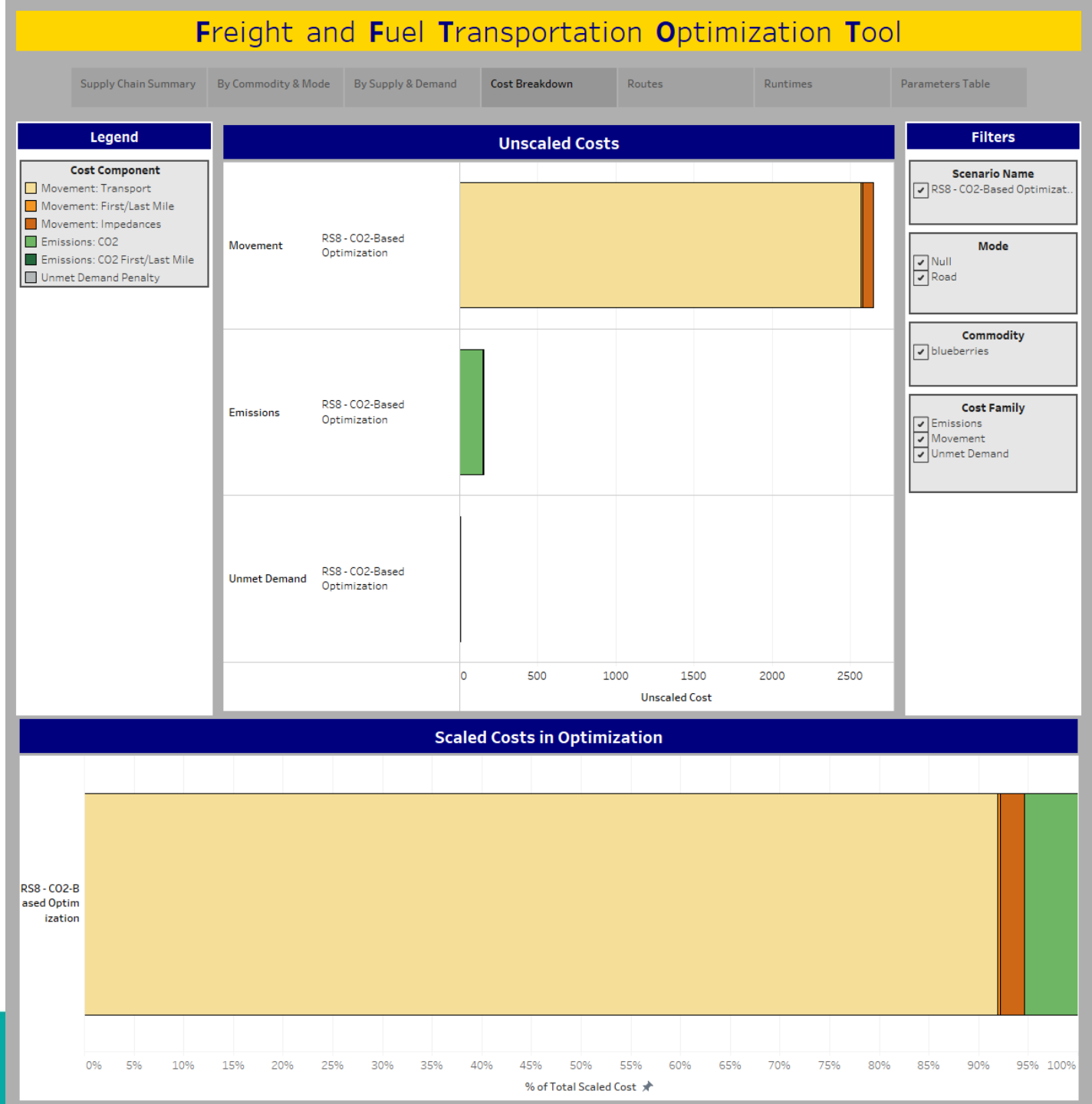
New: Cost reporting

- New outputs explain and visualize costs associated with the optimal routing of a scenario
  - Costs CSV report
  - Cost Breakdown tab in Tableau
- Scaled and unscaled costs for transportation & CO_2
- Reported by commodity and by mode

Cost Family	Cost
Movement	Transport
	First mile / last mile
	Transload
	Impedance
	Penalty (for rail / water short-haul)
Emissions	CO_2
	CO_2 first mile / last mile
Build	Build cost
Unmet demand	Unmet demand penalty

New: Tableau cost breakdown dashboard

- Visualizes the **scaled and unscaled cost components**.
- Scaled costs are **used in the optimization** and incorporate scalars from the scenario XML
  - Transport Cost Scalar (default is 1.0)
  - CO2 Cost Scalar (default is 0.0)



Updated: Intermodal transport and routing costs

- Artificial links connect two types of facilities to the network:
  - User-defined facilities (e.g., RMP, proc, dest)
  - Intermodal facilities
- FTOT includes transport costs for each mode (e.g., per ton-mile for road / rail / water) and transloading costs (e.g., per ton) in the scenario XML
- 2024.2 release updates intermodal facility cost to include a transport component based on artificial link length
  - Previously, intermodal artificial links only included transloading cost
  - Change aligns intermodal artificial links with costs for facility artificial links

Example transport costs for 1.2-mile link connecting road network to intermodal facility

Cost	Rate	Example
Road transport	$0.21 per ton-mile	$0.21 per ton-mile * 1.2 miles
Intermodal	$40 per ton Applied evenly across in-edge and out-edge	$20 per ton
Total		**$20.252 per ton**

Updated: Scenario input validation checks

- Additional input data validation checks:
  - Check facilities geodatabase (GDB) contains feature class layers (rmp, proc, dest) if facility-commodity CSV files specified in scenario XML
  - If facilities GDB contains zero facilities indicated in the facility-commodity CSV file, an error is triggered
  - Otherwise, a warning statement is printed to the log file
  - Check required facility-commodity CSV files exist

Other Updates

- Added flexibility to artificial link creation workflow to inherit ALL network segment attributes
  - Previously, only FTOT network specification attributes were retained
  - Attributes are inherited as-is
- Added flexibility to NetworkX object creation to enable ALL network segment attributes are passed through
- Fixed a logging bug that was consistently printing out a warning to users about log files not successfully added to the FTOT text report
- Updated simple_setup.bat file for FTOT installation to recommend specific package versions for PuLP and Pint

Questions and Feedback on FTOT 2024.2

Discussion: Candidate Generation Scenarios

What types of candidate generation scenarios are you interested in running with FTOT?

Have you run into any challenges with candidate generation in FTOT?

Have you run into any challenges with maximum transport distance for raw materials in FTOT?

Do you have other ideas for new functionality / capabilities in FTOT?

Case Study: Maritime Biofuels in PNW