

FTOT 2024.3

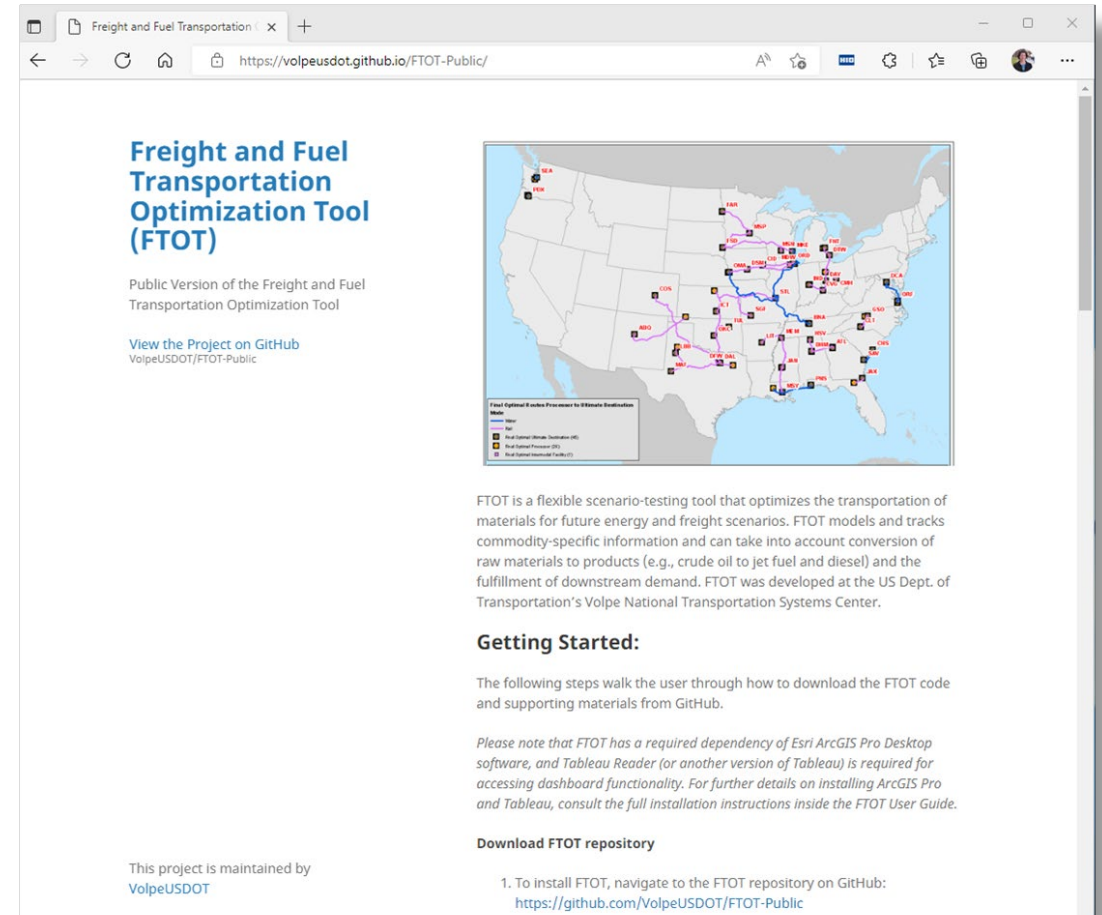
Users Group Meeting

November 6, 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

- 2024.3.1 Software Patch
- 2024.3 Public Release
 - Customized unmet demand penalty (UDP)
 - Customized first-mile, last-mile related costs
 - User configurable inputs
 - Reporting outputs
 - Updated default minimum processor capacity
 - Tableau updates
 - Other updates
 - ArcGIS dependency
 - Automated testing suite
 - Minor bug fixes
- Worked examples: Reference Scenario 1 Exercises
- Roundtable: Documentation

Fixed: FTOT 2024.3.1 Software Patch

The FTOT 2024.3.1 patch includes two minor code updates to accommodate Python library versions associated with **ArcGIS Pro 3.3**. The changes **resolve two instances when the SQLite database** built during an FTOT scenario was locked, resulting in an error. The patch has been tested to ensure **compatibility with ArcGIS Pro 3.2 and 3.3 versions**.

No other changes were made in comparing FTOT 2024.3.1 and FTOT 2024.3. We recommend all users download the 2024.3.1 patch, though users with ArcGIS Pro 3.2 or older may continue to use the 2024.3 version without issue.

New: Custom unmet demand penalties (UDP)

- A new optional column, "udp", may be added to the dest.csv input data
- Column allows the user to customize UDP values for each destination-commodity pair
 - Leaving out column sets the default UDP found in XML for all destinations and commodities
 - Including the column but leaving a cell blank sets the default UDP for only that destination and commodity
- Why would a user include the UDP column?
 - Customizing UDP values for each facility sets priorities for fulfilling demand at destination facilities
 - The higher the UDP value, the higher the prioritization of the destination facility

| facility_name | facility_type | commodity | value | units | phase_of_matter | io | udp |
|---------------|----------------------|---------------------|-------|-------|-----------------|----|-------|
| dest_25025 | ultimate_destination | blueberry_jam | 100 | tons | solid | i | 3000 |
| dest_25025 | ultimate_destination | apple_juice | 75 | tons | solid | i | 5000 |
| dest_25025 | ultimate_destination | canned_apple_butter | 75 | tons | solid | i | |
| dest_25001 | ultimate_destination | canned_apple_butter | 75 | tons | solid | i | 10000 |

Sample dest.csv file

New: Custom first-mile last-mile costs and reporting

- Optional **artificial link transport cost** allowable in XML file
- New **unit cost** per commodity unit associated with movements to or from a facility
- Differs from other costs associated with facility use:
 - **Transport cost** along an artificial link is based on the length of the link and amount of commodity flowing
 - **Build cost** is a “one-time” processor cost depending on if the facility is used
- **Unit cost** is useful for modeling unique transport costs at facilities or different operating costs

How to use:

- Add a “unit_cost” column to any facility CSV
- Units are [default currency unit] / [commodity unit]
- Custom costs can be specified per:
 - Facility
 - Phase of matter
 - In / out movement
- A single processor facility could have four distinct unit costs associated with solid or liquid movement in or out of the facility
- QUESTION: Is **access cost** a more interpretable term than **unit cost**?

Updated: Minimum processor operating capacity

Minimum processor capacity now defaults to zero when the user specifies a maximum capacity

- Previously, FTOT set min capacity at half of the max capacity when max was provided and min was not

Why?

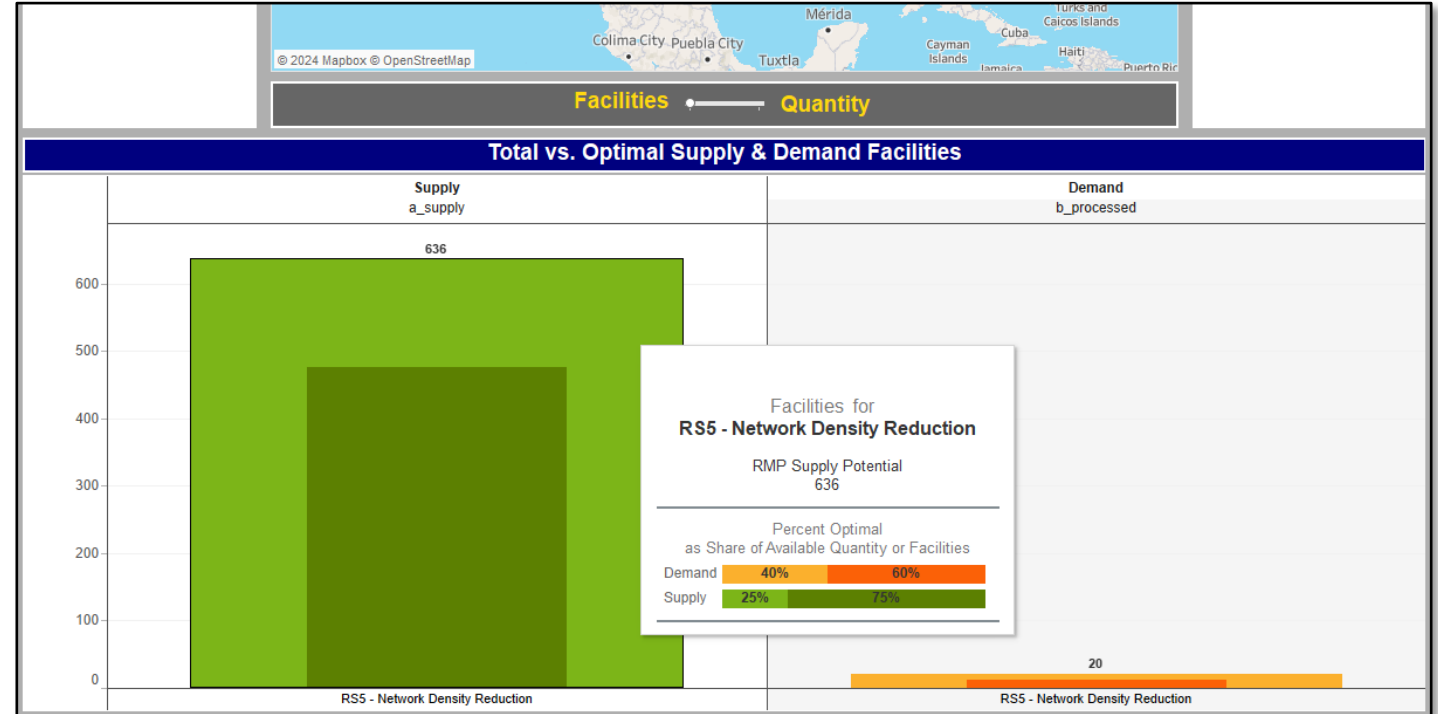
- Minimum processor capacity prevents a processor from being used if flow can't satisfy the minimum
- Users previously could have encountered confusing no-flow solutions due to insufficient flow through a processor even though they had not explicitly set a min capacity

| facility_name | facility_type | commodity | value | units | phase_of_matter | io | max_capacity | min_capacity |
|---------------|---------------|-------------|---------|-------|-----------------|----|--------------|--------------|
| proc_01013 | processor | A_supply | 2787846 | tons | solid | i | 2787846 | 1393923 |
| proc_01013 | processor | B_processed | 3858532 | tons | solid | o | | |
| proc_01035 | processor | A_supply | 2981711 | tons | solid | i | 2981711 | 1490855.5 |
| proc_01035 | processor | B_processed | 2199990 | tons | solid | o | | |
| proc_01099 | processor | A_supply | 1208859 | tons | solid | i | 1208859 | 604429.5 |
| proc_01099 | processor | B_processed | 4084540 | tons | solid | o | | |
| proc_06101 | processor | A_supply | 4584362 | tons | solid | i | 4584362 | 2292181 |
| proc_06101 | processor | B_processed | 854178 | tons | solid | o | | |
| proc_06115 | processor | A_supply | 4794680 | tons | solid | i | 4794680 | 2397340 |
| proc_06115 | processor | B_processed | 1923166 | tons | solid | o | | |
| proc_16039 | processor | A_supply | 4042019 | tons | solid | i | 4042019 | 2021009.5 |
| proc_16039 | processor | B_processed | 1713994 | tons | solid | o | | |

proc.csv file for RS5

Updated: Tableau By Supply & Demand dashboard

- Fixes **bar chart tooltip** on bottom half of dashboard
 - Correctly displays percentage optimal and non-optimal
 - Responds to toggle for commodity quantity vs. number of facilities
- Other minor aesthetic improvements



Other Updates

- Updated ArcGIS dependency to require version 3.0 or higher
- Minor bug fixes:
 - Corrected a logger warning that incorrectly indicated “Impedance weights file not specified”, when impedance weight file was actually specified
 - Corrected the case when minimum capacity and maximum capacity were both set in a processor “total” row, the minimum capacity is ignored

Questions and Feedback on FTOT 2024.3

Worked Examples: Custom UDP and FMLM Costs

Discussion: Documentation



Which documentation files do you use the most?



How do you usually interact with the documentation?



Would you prefer the Technical Documentation and User Guide remain distinct documents?



Are there other functionalities you'd like to see in reference scenarios?