North Florida TPO
Transportation Planning Organization
PLAN • FUND • MOBILIZE

NERPM-AB1v3 Overview

January 2017

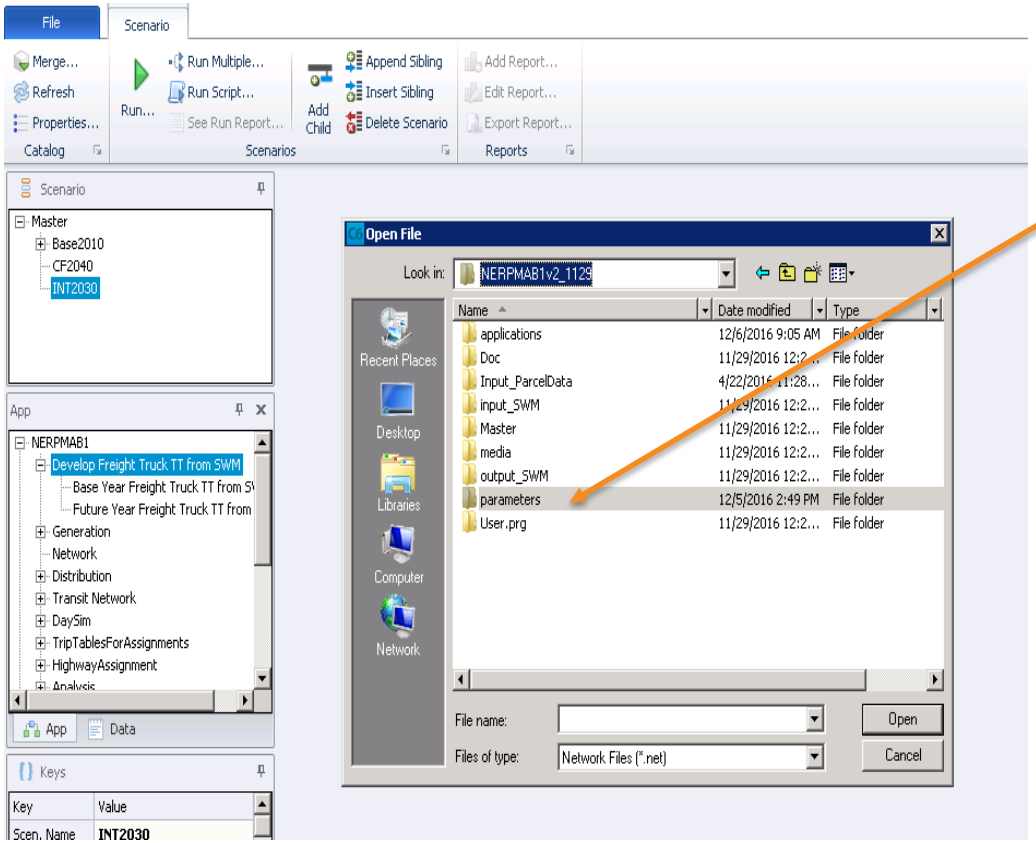
Overview of Updates to NERPM-AB1v3

1. New Master Network
2. Loaded Network Comparison Application
3. Highway Assignment
4. Cube Version 6.4.2
5. ArcGIS Versions Compatibility

New Master Network

New Master Network

MicroCodedHnet42.net

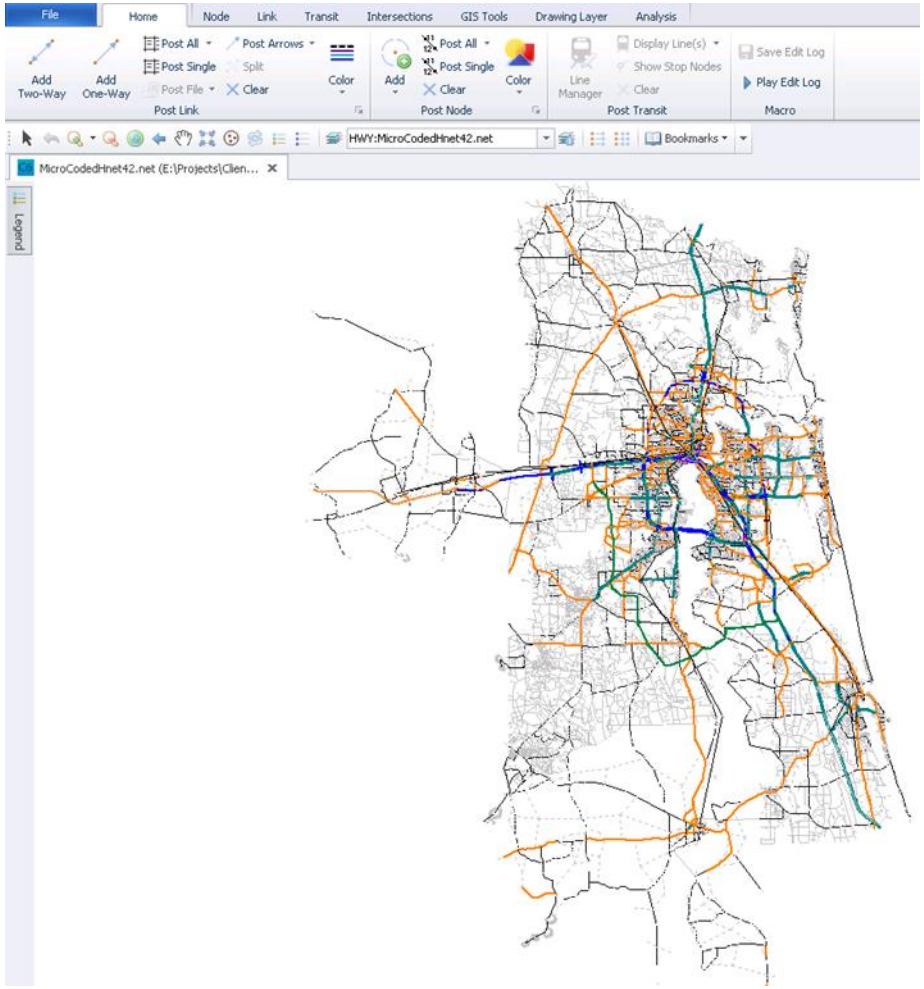


In Cube click on “File” “Open” and navigate to the “parameters” folder.

The Master Network (MicroCodedHnet42.net) is located in the parameters folder.

New Master Network

MicroCodedHnet42.net



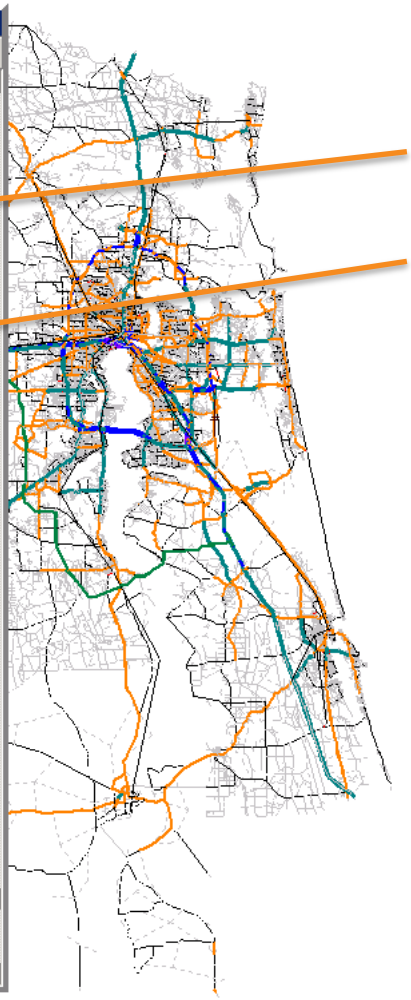
Double-click on the MicroCodedHnet42.net and the network will open and appear in the Cube window.

New Master Network

MicroCodedHnet42.net

Highway Links

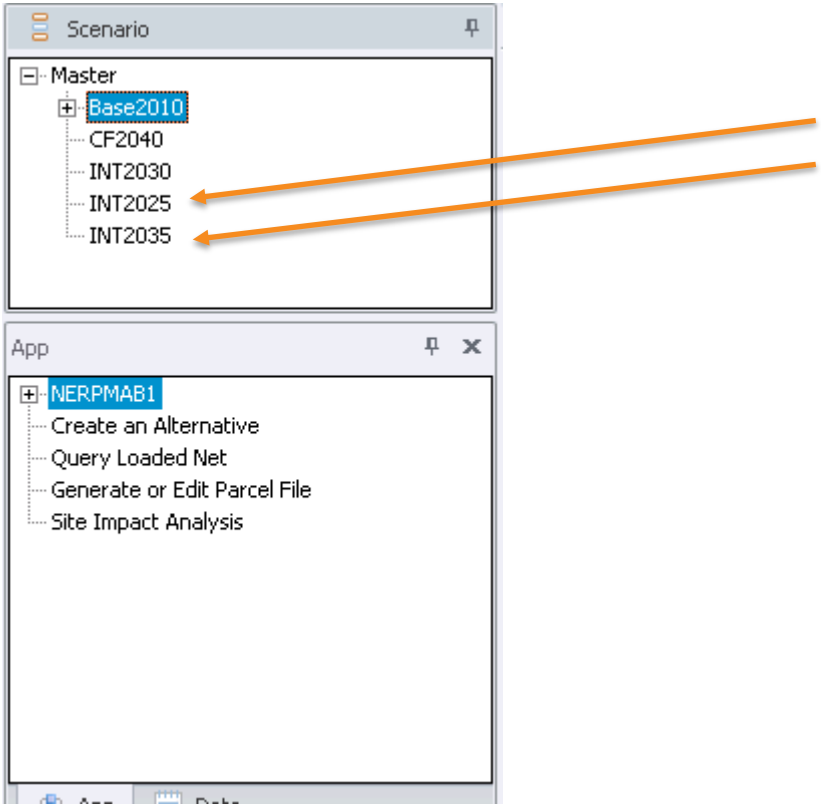
AX/BX	349304	352311.69
AY/BY	2151876	2137143.2
A	1019	8947
B	8947	1019
IMPROV_11B		
AGENCY_11B	0	0
FTYPE_25A	50	50
ATYPE_25A	31	31
LANES_25A	1	1
TWOWAY_25A	1	1
DESC_25A		
BUSTFAC_25A	1	1
FTYPE_35A	50	50
ATYPE_35A	31	31
LANES_35A	1	1
TWOWAY_35A	1	1
DESC_35A		
BUSTFAC_35A	1	1
IMPROV_10A		
AGENCY_10A		
IMPROV_40A		
AGENCY_40A		
FTYPE_20A	50	50
ATYPE_20A	31	31
LANES_20A	1	1
TWOWAY_20A	1	1
DESC_20A		
BUSTFAC_20A	1	1
IMPROV_20A		
AGENCY_20A		
IMPROV_25A		
AGENCY_25A		
FTYPE_26A	50	50
ATYPE_26A	31	31
LANES_26A	1	1
TWOWAY_26A	1	1
DESC_26A		
BUSTFAC_26A	1	1
IMPROV_26A		
AGENCY_26A		



Each link is associated with attributes. The updated MicroCodedHnet42.net has added attributes for 2025 and 2035, while corrections were made to the 2010, 2030, and 2040 networks.

New Master Network

MicroCodedHnet42.net



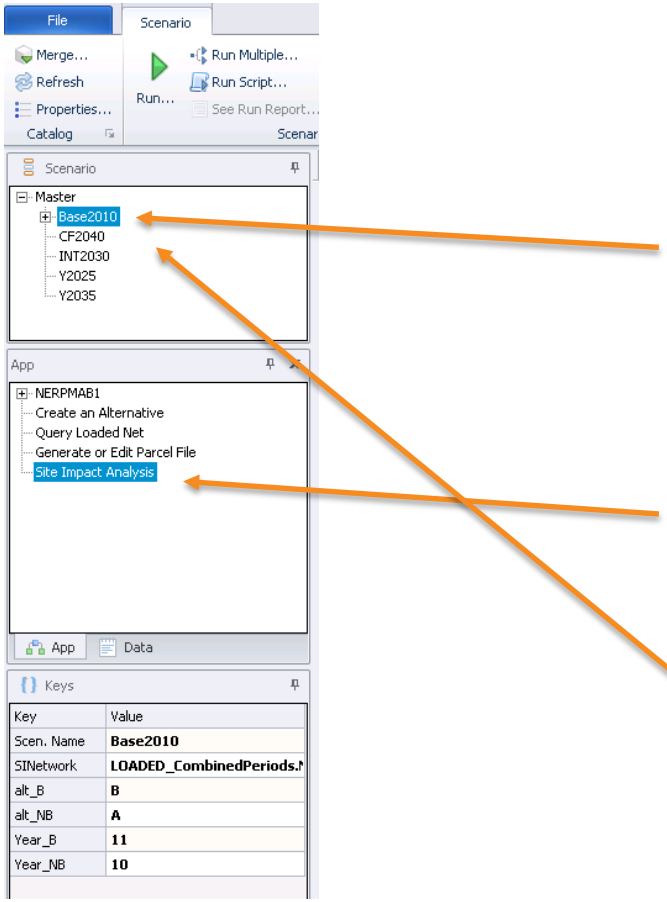
Scenarios have been added for 2025 and 2035. All the input files for these added scenarios are stored in the INT2025 and INT2035 folders in the Master directory.

The previous version (NERPM-AB1v2) included the scenarios Base2010, INT2030, and CF2040.

Please note that due to corrections and updates made to the networks, the turn penalty files for the INT2030 and CF2040 were updated as well.

Loaded Network Comparison Application

Loaded Network Comparison Application



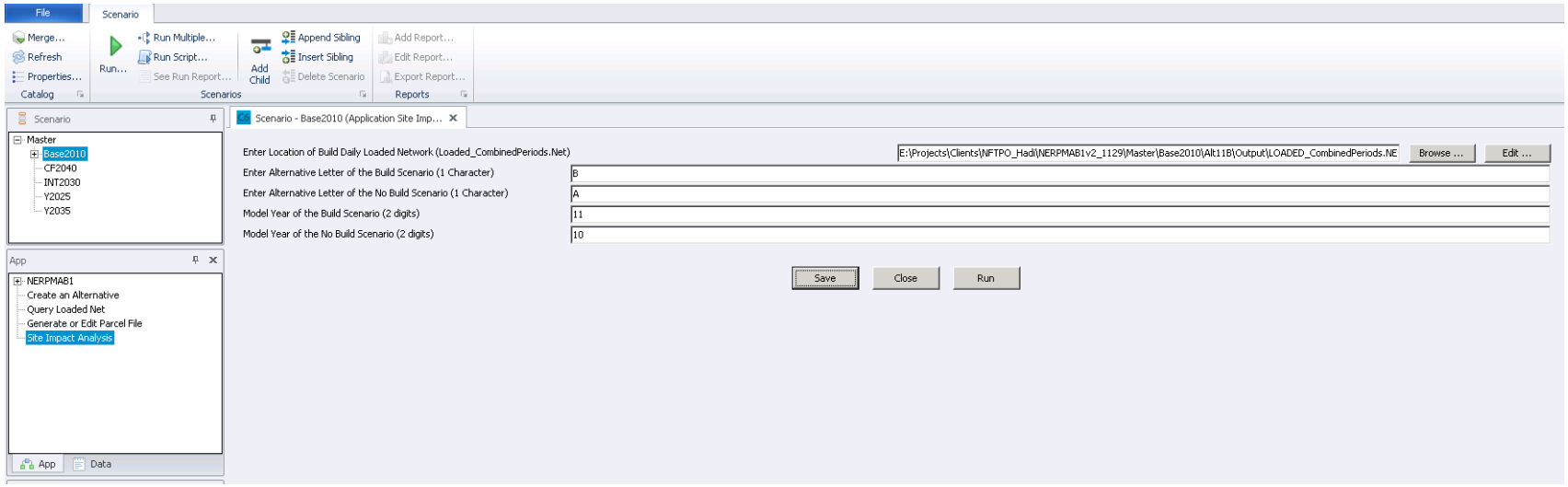
In order to activate the Loaded Network Comparison application, select the No Build scenario—in this example, Base2010.

Next, select the Site Impact Analysis application.

Double-click on the No Build scenario.

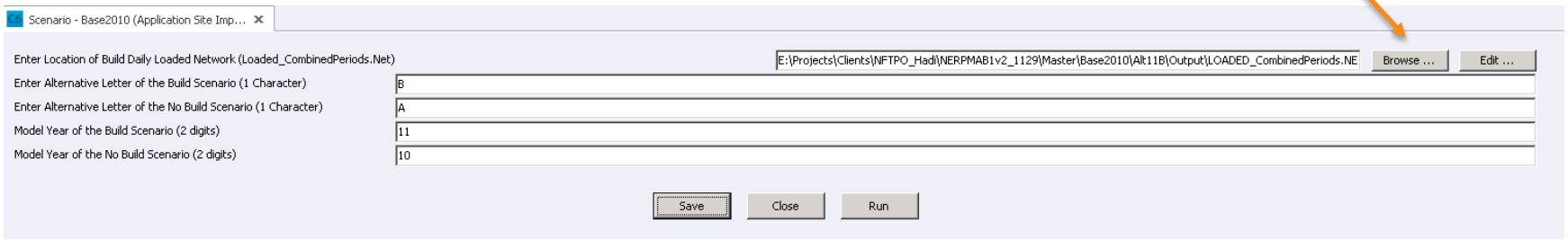
Loaded Network Comparison Application

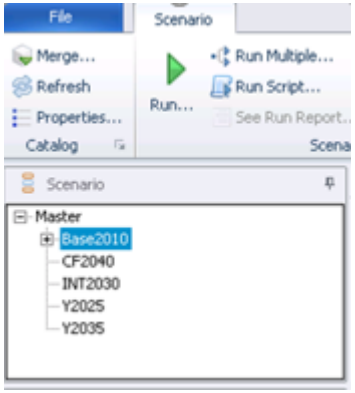
The following window will open.



Loaded Network Comparison Application

In the window, use the browse button to select the loaded highway network (Loaded_CombinedPeriods.Net) in the Build output folder. In this example, Alt11B.

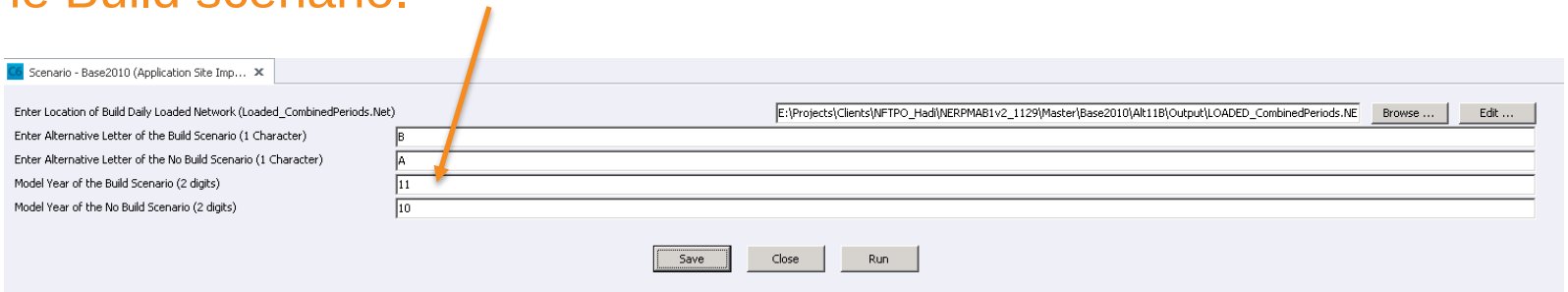




Make sure you are in the No Build scenario, Base2010 in this example, when you open the Loaded Network Comparison Application.

Loaded Network Comparison Application

Next, enter the scenario character and the model year for the No Build and Build scenarios. In this example, 10A is the No Build and 11B is the Build scenario.

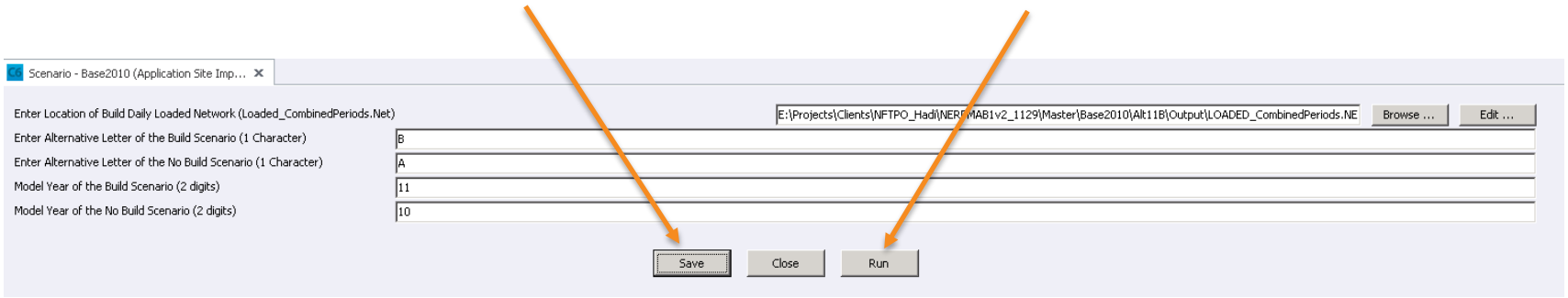


It is important to note that the networks in the No Build and Build scenario need to have the same node numbers and the same active links in both networks (facility type > 0). Facility types equal to 0 are not carried over into the loaded highway network and inconsistencies between the Build and No Build will cause the Loaded Network Comparison Application to fail.

All attributes, such as facility types (other than type 0), area types, and number of lanes, etc. can be different between the scenarios.

Loaded Network Comparison Application

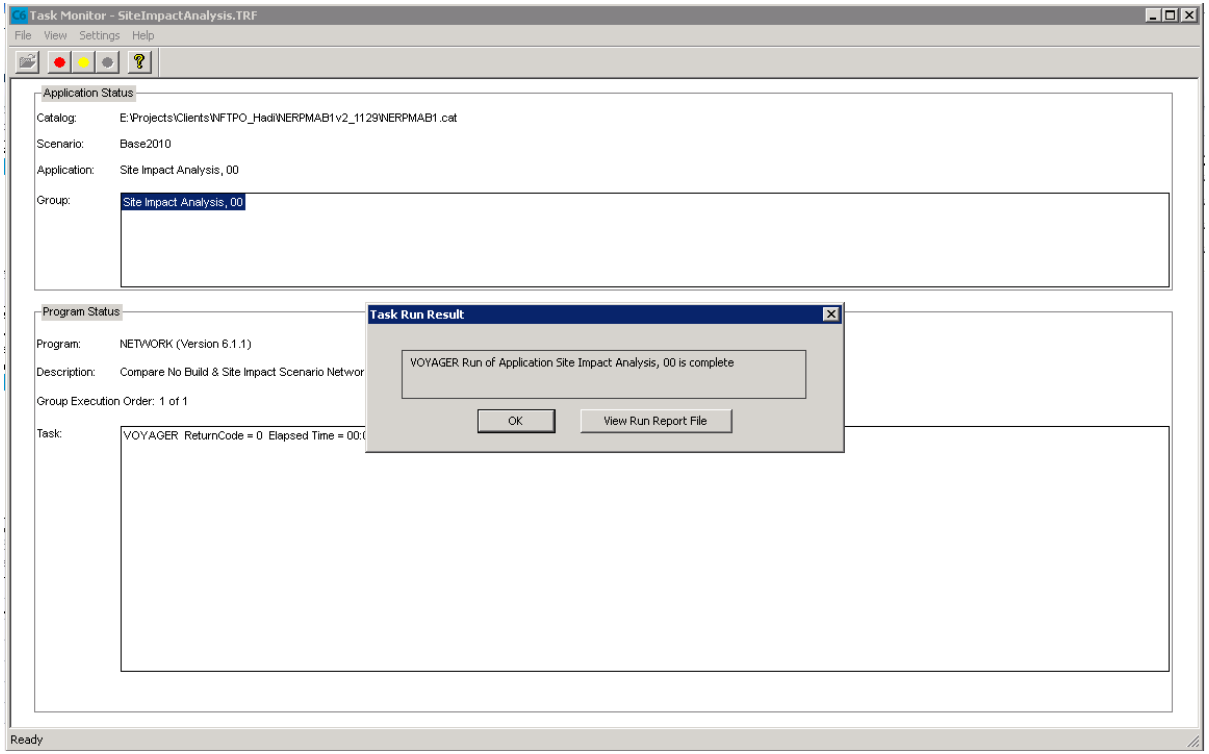
Next, click on the “Save” button and then the “Run” button.



Running the Loaded Network Comparison Application will only take a couple of minutes.

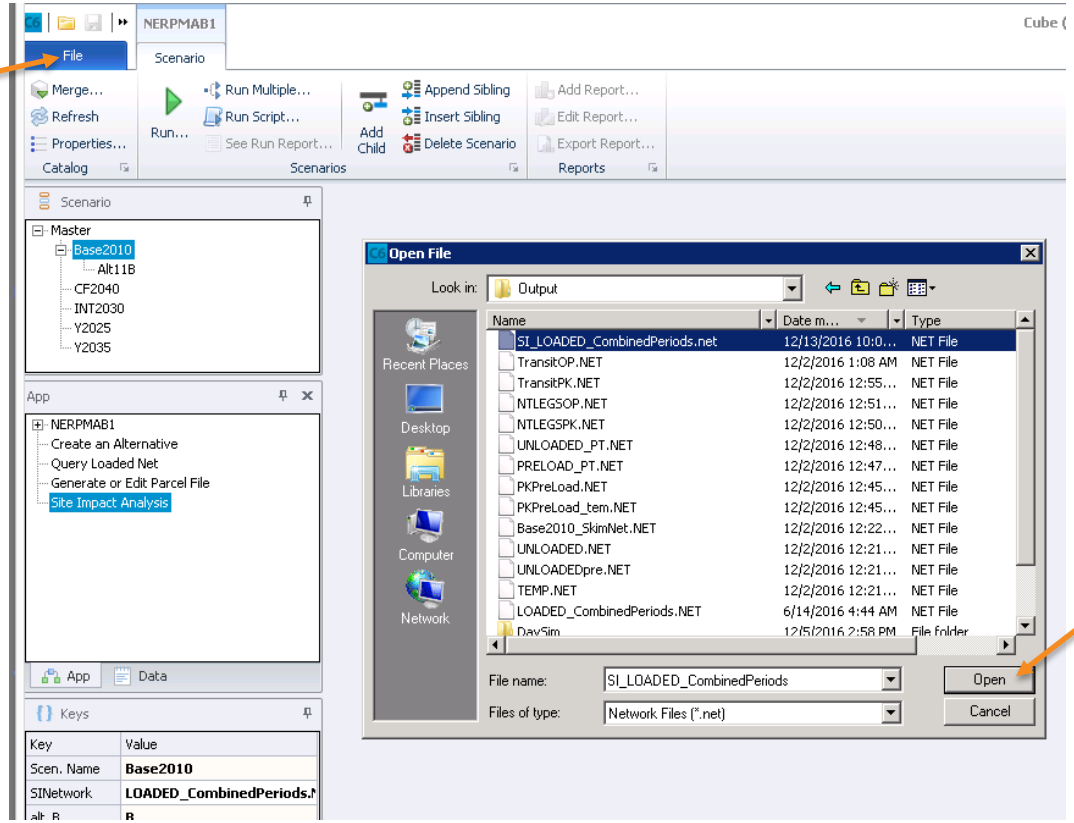
Loaded Network Comparison Application

Next, the Task Monitor window will open showing the execution of the application. Once completed, the Task Run Result box will open. Click “OK.”

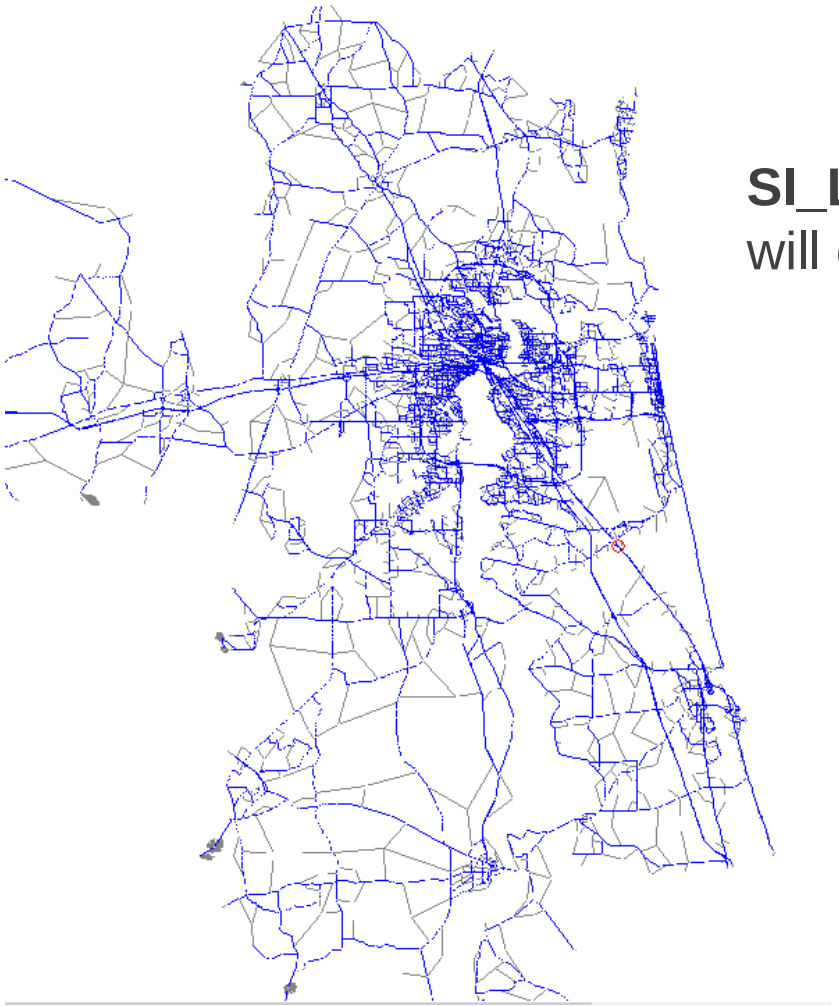


Loaded Network Comparison Application

Next, click on “File” and navigate to the output folder of the No Build scenario (Base2010 in this example) and select the Site Impact loaded network file (SI_LOADED_CombinedPeriods.net). Click “Open.”

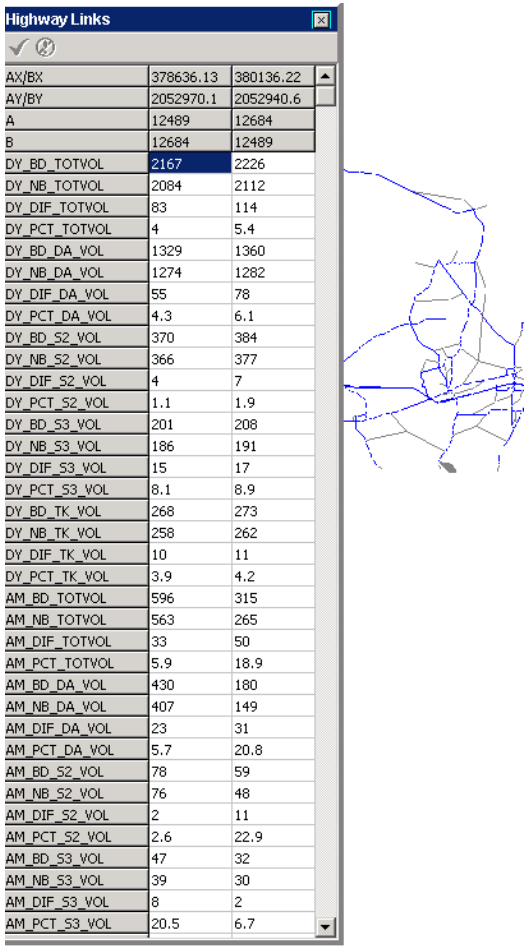


Loaded Network Comparison Application



SI_LOADED_CombinedPeriods.net will open in the Cube window.

Loaded Network Comparison Application



Click on any link and the attribute box will appear.

The attributes that are listed for each link are the volumes for the No Build and Build scenarios for each of the time periods (DY, AM, MD, PM, NT) by the different trip tables (TOTVOL, DA, S2, SR3,TK), as well as the difference in volume and percentage between the No Build and Build scenarios by direction.

In the name of the attribute BD refers to the Build scenario and the NB refers to the No Build scenario.

Loaded Network Comparison Application

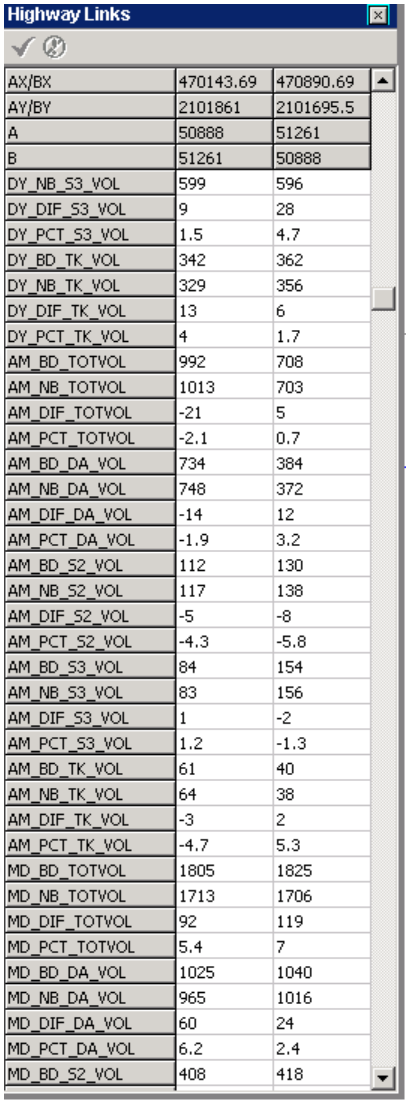
Highway Links

AX/BX	470143.69	470890.69
AY/BY	2101861	2101695.5
A	50888	51261
B	51261	50888
DY_BD_TOTVOL	4940	5064
DY_NB_TOTVOL	4664	4802
DY_DIF_TOTVOL	276	262
DY_PCT_TOTVOL	5.9	5.5
DY_BD_DA_VOL	2995	3061
DY_NB_DA_VOL	2805	2896
DY_DIF_DA_VOL	190	165
DY_PCT_DA_VOL	6.8	5.7
DY_BD_S2_VOL	995	1017
DY_NB_S2_VOL	931	955
DY_DIF_S2_VOL	64	62
DY_PCT_S2_VOL	6.9	6.5
DY_BD_S3_VOL	608	624
DY_NB_S3_VOL	599	596
DY_DIF_S3_VOL	9	28
DY_PCT_S3_VOL	1.5	4.7
DY_BD_TK_VOL	342	362
DY_NB_TK_VOL	329	356
DY_DIF_TK_VOL	13	6
DY_PCT_TK_VOL	4	1.7
AM_BD_TOTVOL	992	708
AM_NB_TOTVOL	1013	703

In this example, link 50888 - 51261 is shown. In the AB direction, the total daily volume for the Build scenario (DY_BD_TOTVOL) is 4,940. The total daily volume for the No Build scenario (DY_NB_TOTVOL) is 4,664. The difference in volume (DY_DIF_TOTVOL) between the two is 276, while the percent difference (DY_PCT_TOTVOL) is 5.9.

Drive alone (DA), followed by the 2+ (SR2), 3+ (SR3) and the truck (TK) trip tables are also provided.

Loaded Network Comparison Application

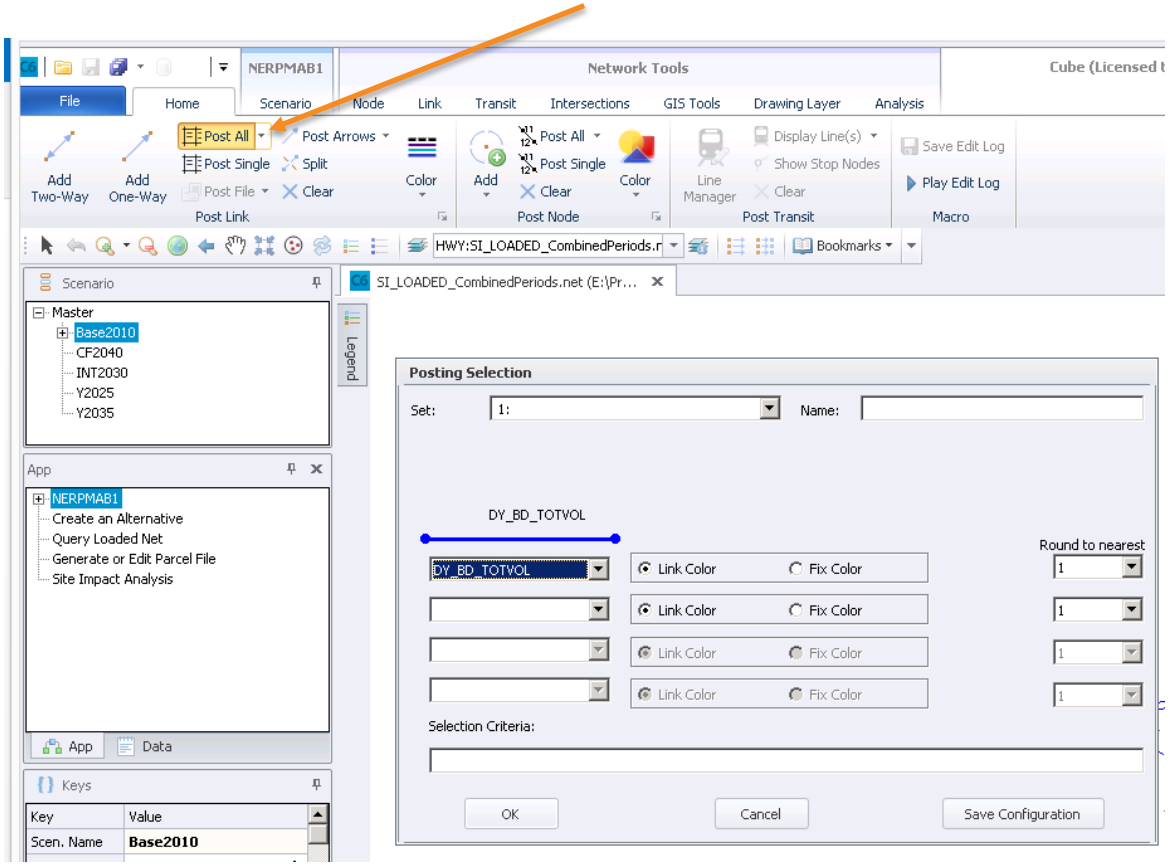


AX/BX	470143.69	470890.69
AY/BY	2101861	2101695.5
A	50888	51261
B	51261	50888
DY_NB_S3_VOL	599	596
DY_DIF_S3_VOL	9	28
DY_PCT_S3_VOL	1.5	4.7
DY_BD_TK_VOL	342	362
DY_NB_TK_VOL	329	356
DY_DIF_TK_VOL	13	6
DY_PCT_TK_VOL	4	1.7
AM_BD_TOTVOL	992	708
AM_NB_TOTVOL	1013	703
AM_DIF_TOTVOL	-21	5
AM_PCT_TOTVOL	-2.1	0.7
AM_BD_DA_VOL	734	384
AM_NB_DA_VOL	748	372
AM_DIF_DA_VOL	-14	12
AM_PCT_DA_VOL	-1.9	3.2
AM_BD_S2_VOL	112	130
AM_NB_S2_VOL	117	138
AM_DIF_S2_VOL	-5	-8
AM_PCT_S2_VOL	-4.3	-5.8
AM_BD_S3_VOL	84	154
AM_NB_S3_VOL	83	156
AM_DIF_S3_VOL	1	-2
AM_PCT_S3_VOL	1.2	-1.3
AM_BD_TK_VOL	61	40
AM_NB_TK_VOL	64	38
AM_DIF_TK_VOL	-3	2
AM_PCT_TK_VOL	-4.7	5.3
MD_BD_TOTVOL	1805	1825
MD_NB_TOTVOL	1713	1706
MD_DIF_TOTVOL	92	119
MD_PCT_TOTVOL	5.4	7
MD_BD_DA_VOL	1025	1040
MD_NB_DA_VOL	965	1016
MD_DIF_DA_VOL	60	24
MD_PCT_DA_VOL	6.2	2.4
MD_BD_S2_VOL	408	418

The next time period listed is the AM, followed by the MD, PM, and NT.

For all time periods, the same information is listed for both the No Build and the Build; the total daily volume by scenario and the difference in volume in numbers and in percentages between the scenarios by the different trip tables.

Loaded Network Comparison Application



Next, the user can analyze the results using the typical Cube tools. In the following example, “Post All” is used to post information on the highway network links.

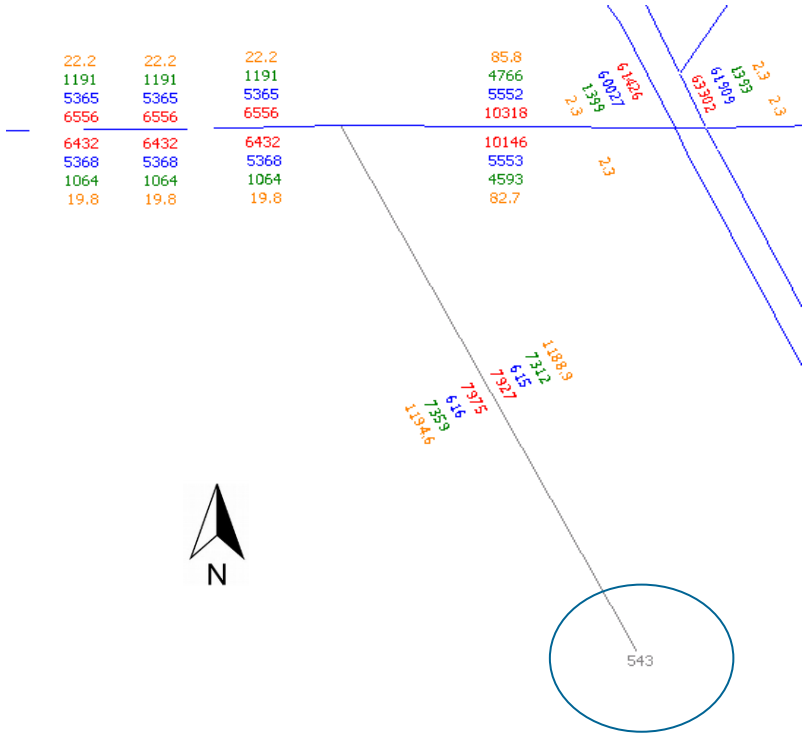
Loaded Network Comparison Application

Below, “Post All” is used to post the daily total volumes for the Build (red) and No Build (blue) scenarios as well as the difference (green) and percent difference (orange) for those links with a total daily volume greater than 0.

Loaded Network Comparison Application

In this example, we added 7,000 office employees to TAZ 543 in the Build scenario. The impact of a development as estimated by DaySim results in an increase in trips in the eastbound direction of 1,064 trips west of the centroid and an increase of 4,593 trips east of the centroid connector.

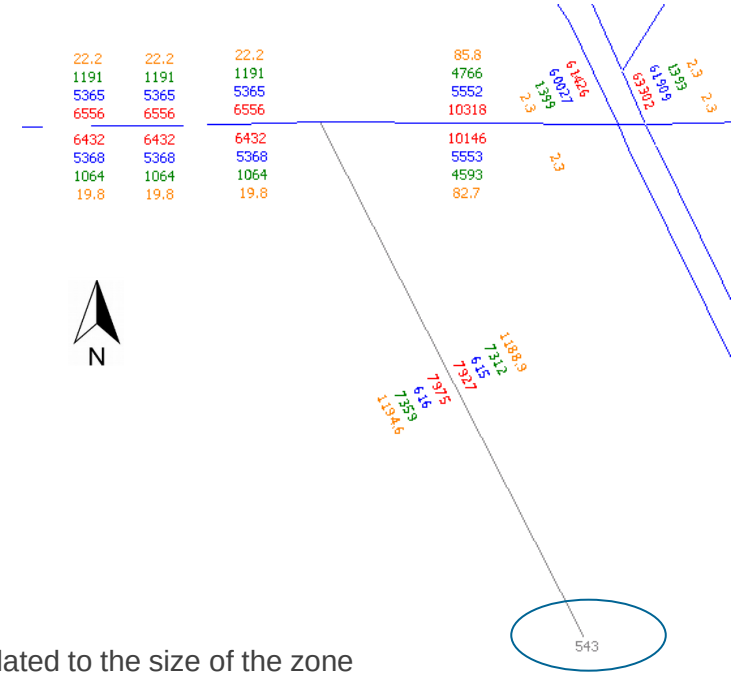
In the westbound direction, the increase in number of trips is 4,766 east of the centroid connector and 1,191 trips west of the centroid connector.



Loaded Network Comparison Application

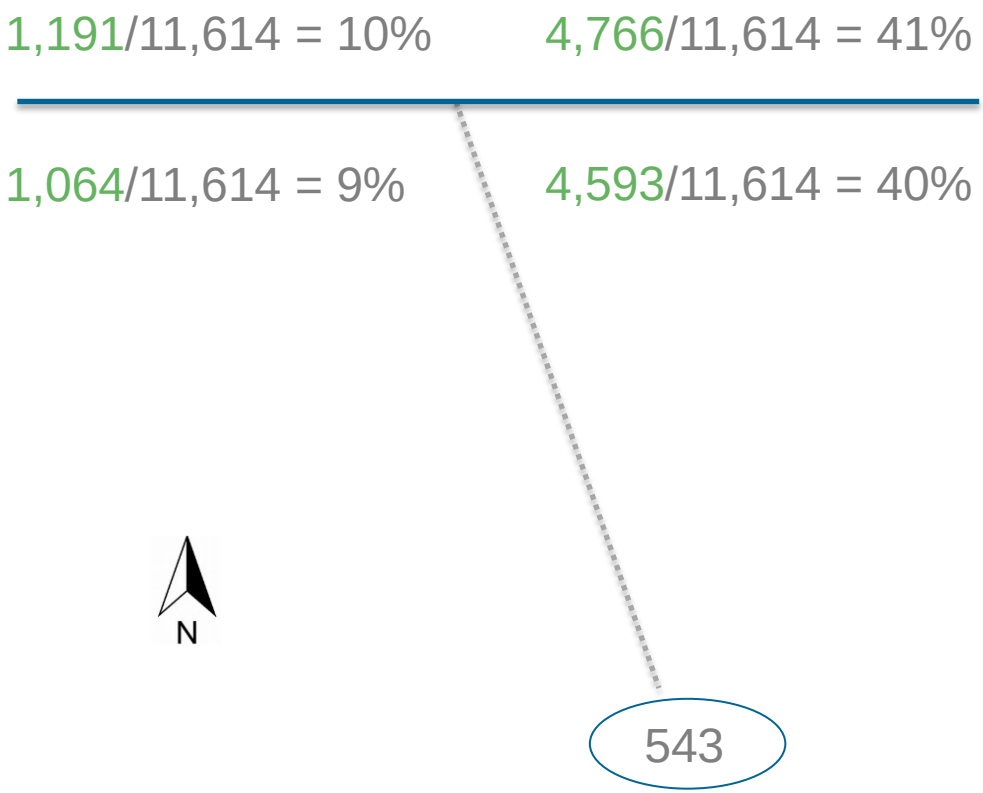
The percentages that are listed show the percent increase from the No Build scenario. If we look in the eastbound direction, west of the centroid the percent increase is 19.8% (1,064/5,368) and the increase east of the centroid connector is 82.7% (4,593/5,552), etc.

The total number of trips generated by the 7,000 office employees is 14,671 (7,312 + 7,359). Of those, 11,614 are assigned to the network (1,191 + 1,064 + 4,766 + 4,593). The difference remains within the zone and is referred to as internal trips*.



* The number of internal trips generated in a zone is related to the size of the zone and the type of land uses within the zone

Loaded Network Comparison Application

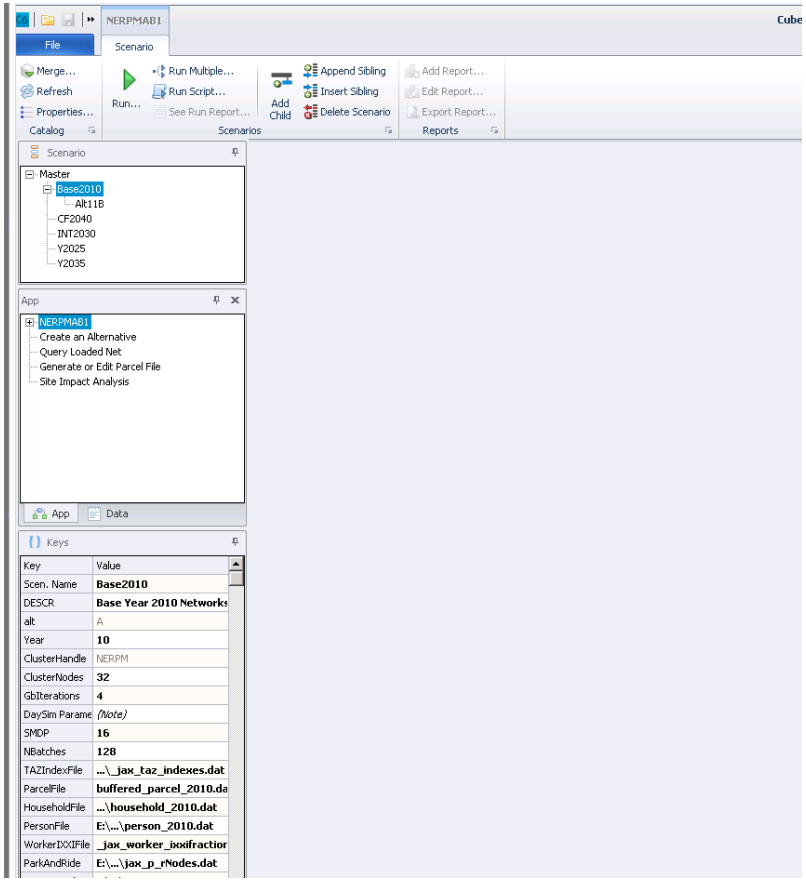


This diagram shows the distribution of the 11,614 trips associated with the 7,000 office employees in TAZ 543 in volume and in percentage.

Highway Assignment

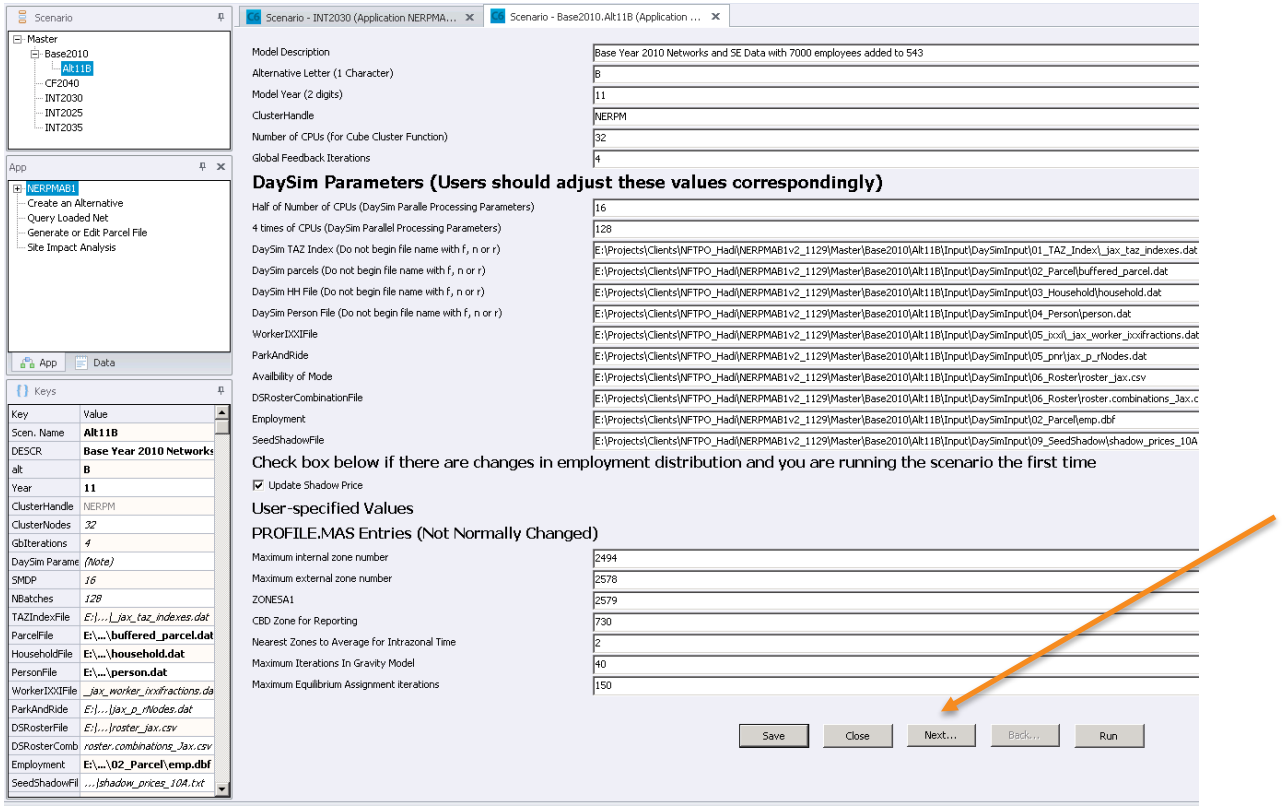
Highway Assignment

When starting the NERPM-AB1v3, the following window will open.



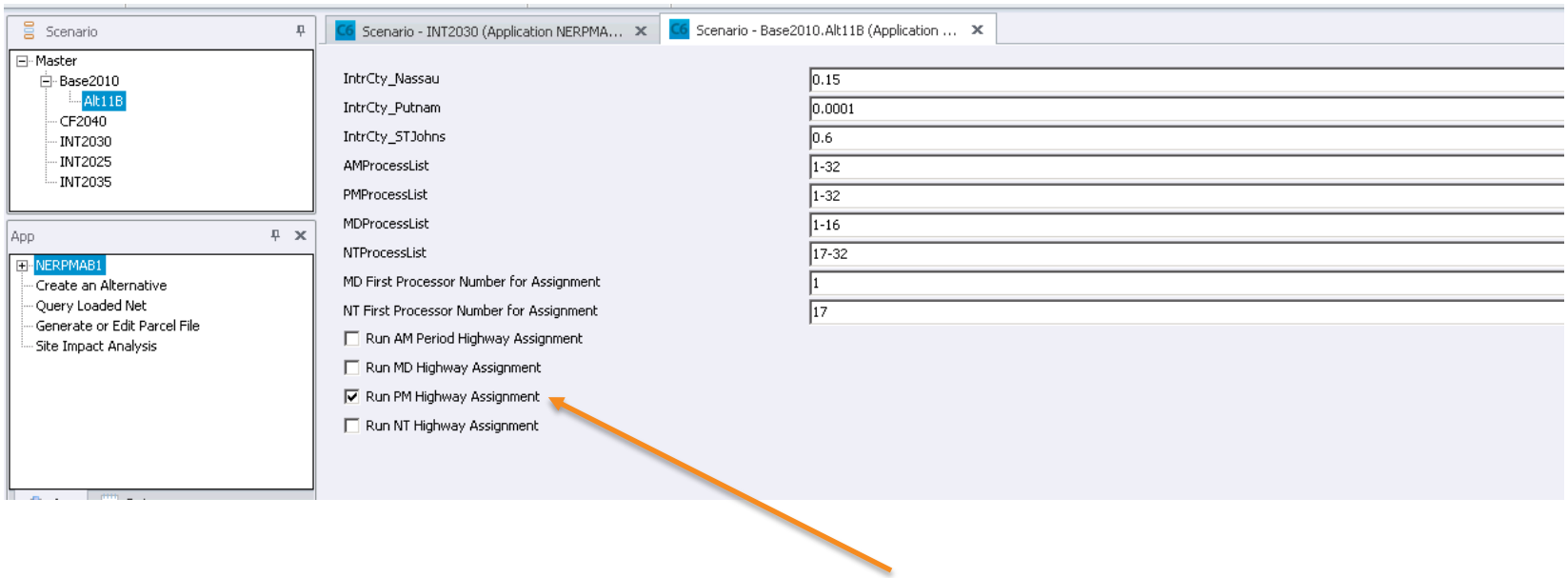
Highway Assignment

Double-click on the scenario and the User Interface will open up. In this example, the ALT11B was selected. Click on the “Next” button until the last page is reached.



Highway Assignment

On the last page, the user has the option to select the highway assignment time periods of interest. The user can select the AM, MD, PM, and/or NT highway assignment. In this example, the PM time period was selected for the Build scenario (Alt11B). To obtain daily assignment, select all assignment periods (AM, MD, PM, NT).



Highway Assignment

Prior to running one or more time periods, the user must ensure that:

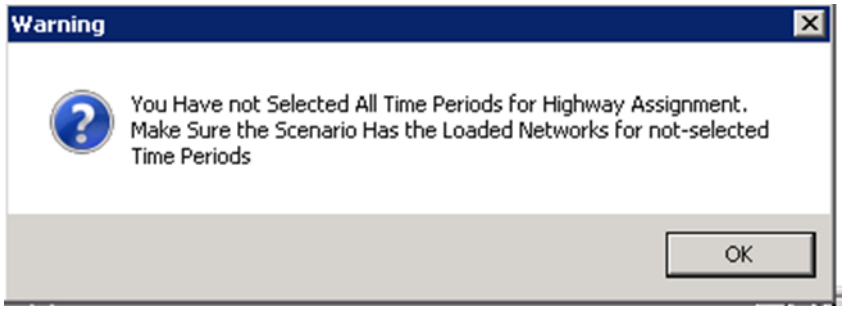
1. The FINAL.ASGN_*.net files for those time periods that are not being run are in the output folder of the scenario which is being run (in this example, the Alt11B output folder). The user can copy these files from another scenario provided the network is the same (node numbers and links).

2. The user needs to set the correct number of cores for the time period being run.

Highway Assignment

Selecting one time period

If the user does not select all time periods, the following message will appear to remind the user to copy the necessary FINAL.ASGN_*.NET files.



Copy the FINAL.ASGN_*.net files for the time periods you are not going to run in the output folder and click “OK.” After a couple of seconds, the program will start back up automatically.

Highway Assignment

Selecting one time period

If only one period is run, such as the PM time period, then the user needs to copy the FINAL.ASGN_AM.NET, FINAL_ASGN_MD.NET, and FINAL.ASGN_NT.NET into the scenario's output folder prior to running the PM assignment.

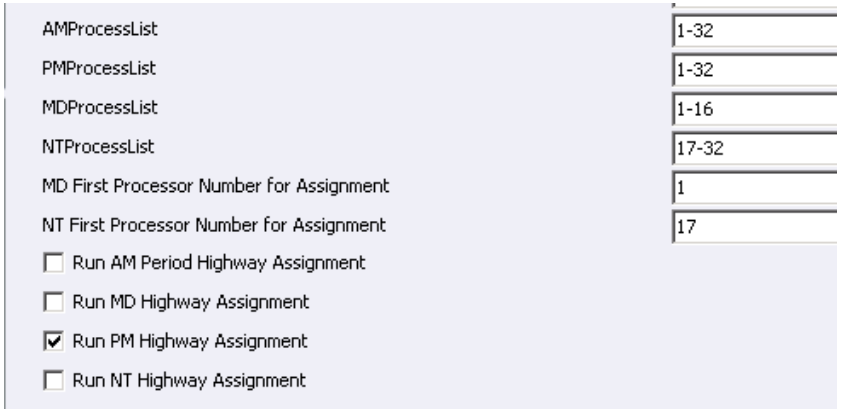
The results for the PM run can be found in the LOADED_PM_Period.NET loaded network output file.

It is important to note that only the PM time period will be reflected correctly in the LOADED_CombinedPeriods.net. All other time periods (DY, AM, MD, and NT) will either not have been updated (AM, MD, NT) or will not reflect the correct volume (DY).

Highway Assignment

Setting number of cores

In this example, the machine has 32 cores. Cores 1 through 32 are used for the AM and PM highway assignment, while Cores 1 through 16 are used for the MD and 17 through 32 for the NT highway assignment.



In this set up, the AM and PM assignment run in sequence, while the MD and NT run in parallel (at the same time). If the user **only** wants to run the midday (MD) highway assignment then setting the processlist to 1-32 would allow the user to make use of all the cores. The same holds true if the user **only** wants to run the NT highway assignment—in order to use all the cores, the user would change the processlist to 1-32.

Cube Version 6.4.2

Cube Version 6.4.2

NERPM-AB1v3 was run using the latest Cube version 6.4.2. The highway and transit assignments were compared against Cube Version 6.1.1 and no significant differences were identified.

The NERPM-AB does not run with Cube version 6.4.1.

ArcGIS Versions Compatibility

ArcGIS Versions Compatibility

The Generate of Edit Parcel File Application developed for use with the NERPM-AB model has been tested and is compatible with ArcGIS10.2. The Generate of Edit Parcel File Application might not be compatible with the newer versions of ArcGIS.

Recently, the Generate of Edit Parcel File Application was tested with ArcGIS 10.4 and the following changes will need to be made to the code in order for the tool to work with this latest version.

New code statements:

```
import csv
with open(ouput_parcels_csv,'wb') as f:
   w = csv.writer(f)
   w.writerow(fieldnames)
   for row in arcpy.da.SearchCursor(output_parcels, field_names=fieldnames):
      w.writerow(row)
```

Questions?

Please contact us with any questions concerning the NERPM-AB model by emailing Nerpm_Support@rsginc.com or directly contacting Milton Locklear at the North Florida TPO at 904-306-7503 or mlocklear@northfloridatpo.com