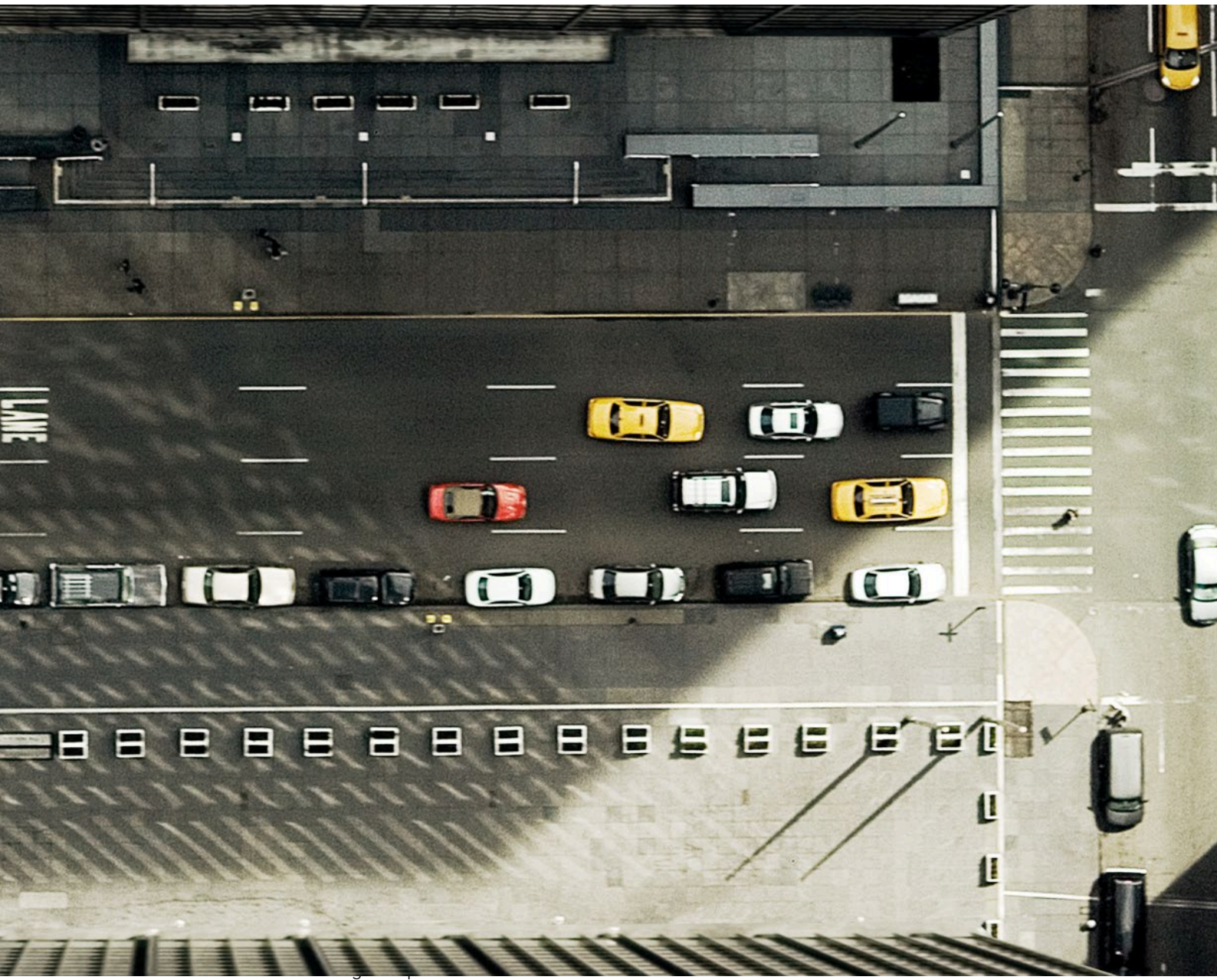


PTV GROUP

WHAT'S NEW

PTV Vistro 2024



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## **Imprint**

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## Preamble

This document offers a glimpse into the significant Service Pack updates in PTV Vistro, spanning from version 2023 to version 2024, as well as the latest additions in the initial release of version 2024. For additional features, please refer to the release notes. It's worth noting that future versions within the 2024.00-xy service packs will introduce new features not covered in this overview document.

For comprehensive instructions on utilizing the new functionality, you can consult the Vistro 2024 online help and refer to the document titled "PTVVistro2024\_Manual.pdf"

## Release Highlight Summary

PTV Vistro 2024 brings numerous enhancements that enhance your flexibility in data integration and offer new key performance indicators (KPIs) for comprehensive junction analysis. We have streamlined the process of integrating field data into your traffic models, making it easier and more efficient.

One of PTV Vistro's standout features is its ability to directly import crucial data from traffic controller software such as Econolite Centrac and various commercial monitoring and traffic count providers. This includes traffic signal base timing, pattern data, and peak-hour turn movement count volume data. This direct connection enables us to quickly calculate the environmental impact of carbon emissions and measure the emissions reductions achieved through the adoption of electric and autonomous vehicles.

In an era characterized by transformative automotive technologies, it becomes essential to align our design and policy decisions with modeling tools and KPIs that match our evolving objectives. With the rise of connected and autonomous vehicles (CAVs) and the growing prevalence of electric vehicles (EVs), we must adapt to the dynamics of modern vehicle fleets. The critical question is: How can we define a "good design" within this ever-evolving landscape? Vistro can provide the answer!

Vistro 2024 tackles this challenge by incorporating attributes that are relevant to CAVs and EVs, enabling you to make informed decisions regarding signal optimizations that extend beyond mere capacity enhancements.

Moreover, PTV Vistro now offers enhanced integration capabilities, allowing your engineering design details to effortlessly create and maintain Visum and Vissim models. You can seamlessly transfer sections of your Vistro models to update your Visum planning model or use Vistro for rapid studies on leading pedestrian intervals, seamlessly incorporating them into a full Vissim microsimulation.

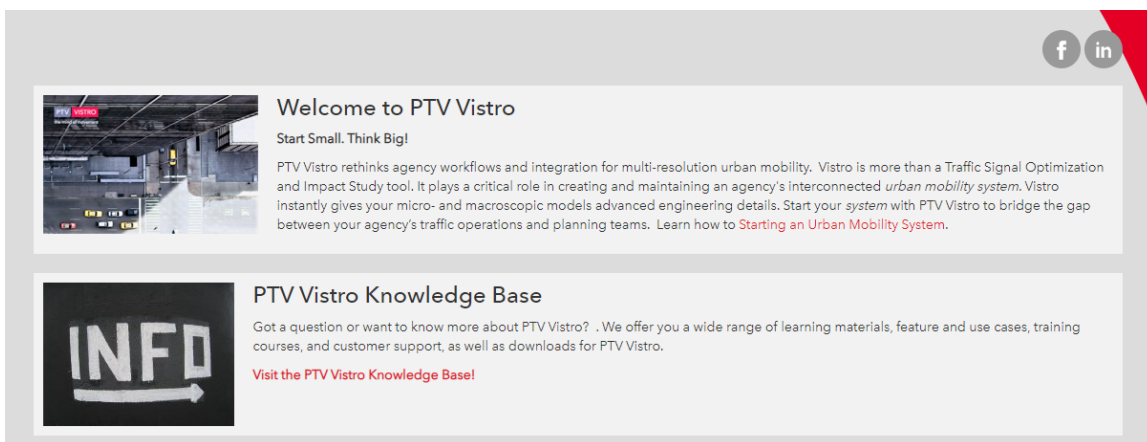
With PTV Vistro 2024, you gain access to a suite of advanced features and tools that not only simplify data integration and analysis but also empower you to effectively navigate the complexities of modern transportation systems.

# 1 Workspace


## 1.1 Vistro's start page website

Keep yourself informed about the latest Vistro updates by utilizing our new 'Open Start Page in Web Browser' option in the 'View' menu. This feature simplifies the process of reopening the Vistro start page in your web browser. By using it, you can revisit important tutorial materials, stay updated on the latest service pack releases, and access detailed information regarding upcoming events.

This useful addition guarantees that you can effortlessly access the most current and pertinent Vistro resources, ensuring you are well-informed and ready to maximize the benefits of our software.



f in



### Welcome to PTV Vistro

**Start Small. Think Big!**

PTV Vistro rethinks agency workflows and integration for multi-resolution urban mobility. Vistro is more than a Traffic Signal Optimization and Impact Study tool. It plays a critical role in creating and maintaining an agency's interconnected *urban mobility system*. Vistro instantly gives your micro- and macroscopic models advanced engineering details. Start your *system* with PTV Vistro to bridge the gap between your agency's traffic operations and planning teams. Learn how to [Starting an Urban Mobility System](#).

### 

### PTV Vistro Knowledge Base

Got a question or want to know more about PTV Vistro? . We offer you a wide range of learning materials, feature and use cases, training courses, and customer support, as well as downloads for PTV Vistro.

[Visit the PTV Vistro Knowledge Base!](#)

## 2 Analysis Methods

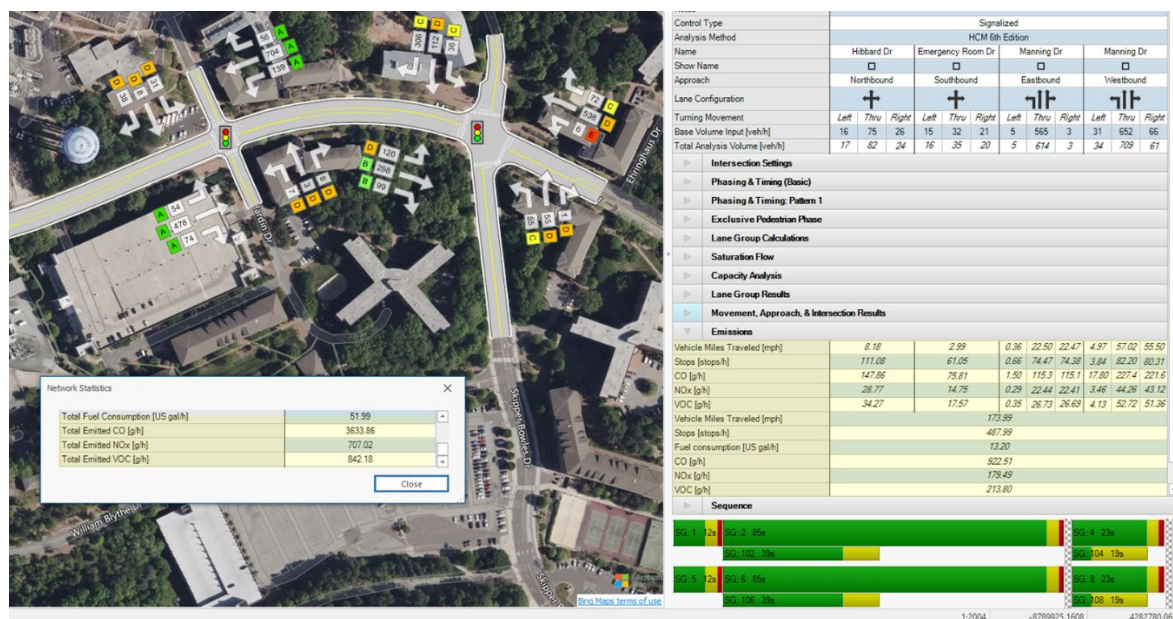
### 2.1 Emissions

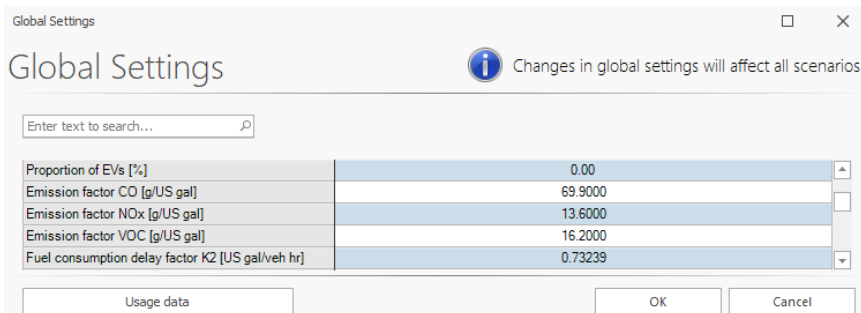
Vistro's latest emissions calculation feature provides a user-friendly solution for evaluating your network's environmental impacts. This innovative tool allows you to easily analyze various aspects of your network's ecological footprint, including operational fuel consumption, vehicle miles traveled, and emissions of harmful gases like carbon dioxide (CO), nitrogen oxides (NOx), and volatile organic compounds (VOC) at both the intersection and network levels. This comprehensive approach offers a broader set of metrics to optimize your traffic signal management, going beyond addressing signal delay.

You can conveniently find the results of these emissions calculations in a dedicated 'Emissions' sub-table within the 'Traffic Control' workflow for each intersection. Moreover, accessing the total emissions data for your entire network is straightforward through the network statistics window. These values seamlessly integrate into Vistro's reports, ensuring that you have essential environmental data at your fingertips when making informed decisions.

To enhance your experience further, Vistro provides 'Global Settings' that enable you to customize emissions values based on your local vehicle fleet composition. Whether you prefer imperial or metric units, you can tailor the calculations to match the specific characteristics of your region, ensuring accuracy and relevance in your assessment of environmental impact.

With Vistro's advanced emissions calculation feature, you can now make more informed and environmentally conscious decisions while managing your network, contributing to a greener and more sustainable transportation infrastructure.

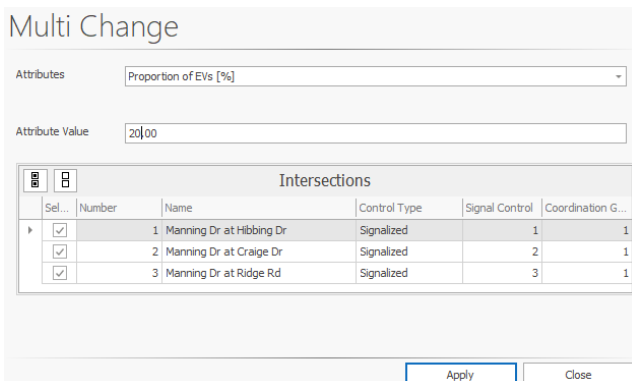




## 2.2 Proportion of Electric vehicles

Vistro now evaluates the impact of electric vehicles on carbon emissions, turning it into a valuable tool for exploring different scenarios and promoting local policies and electrification goals. Moreover, you can future-proof your designs and fine-tune your vehicle fleet further by considering connected and autonomous vehicles at signalized intersections and roundabouts using HCM 7th Edition calculations.

In the 'Volumes' workflow, you can easily integrate the 'Proportion of EV%' parameter at signalized intersections to precisely account for electric vehicles in traffic volumes. This adjustment efficiently trims down the number of vehicles factored into emissions calculations, resulting in reduced fuel consumption and fewer greenhouse gas emissions at the intersection. You can establish a consistent EV% for your entire network using 'Global Settings' and the multi-change tool.

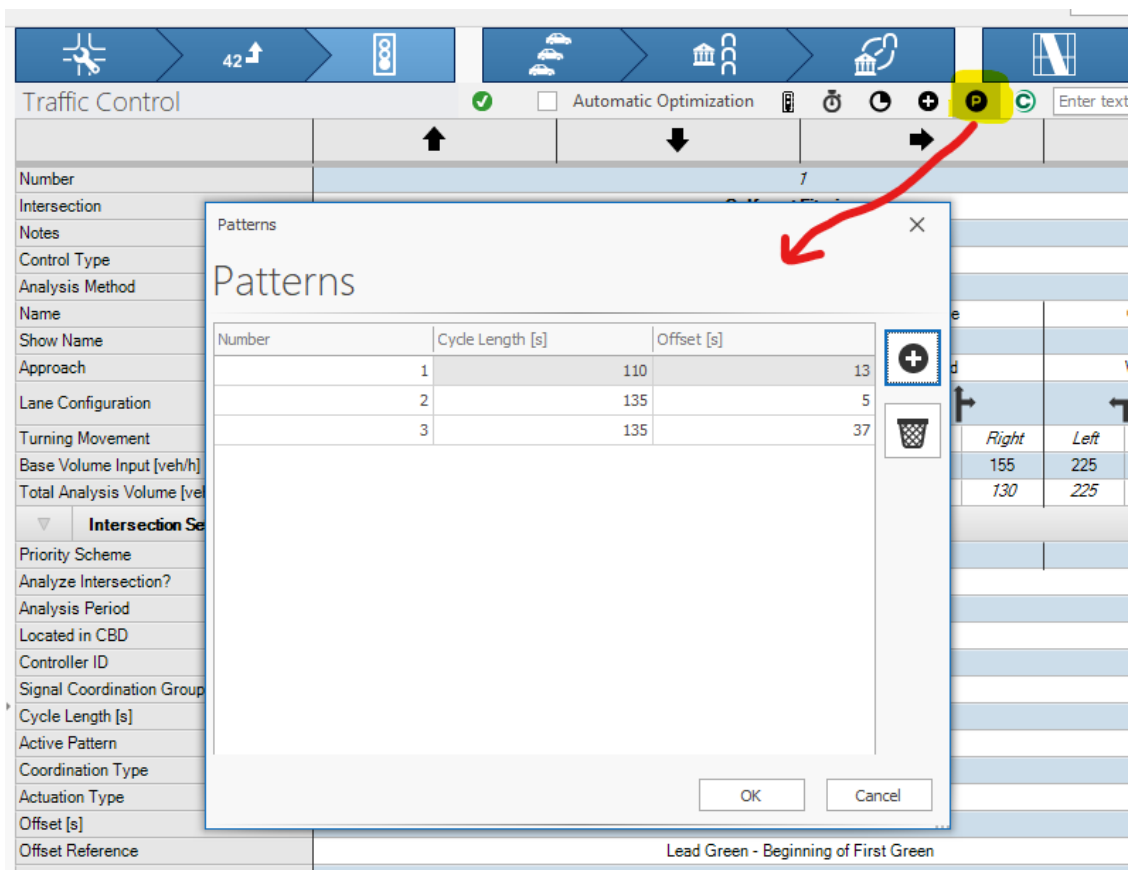


## 3 Traffic Control Workflow

### 3.1 Patterns

Vistro is a unified system that generates multiple time-of-day timing plans. You can select and optimize multiple timing patterns within a single signal controller. Each pattern includes various values for each signal group, with the most important ones being the signal phase split, cycle length, and offset. When you designate a pattern as active using the newly introduced 'Active Pattern' control in the 'Traffic Control' workflow's 'Intersection Settings' sub-table, the splits are adjusted, and calculations are performed based on the newly activated pattern.

To access this functionality, simply click the button to open the new 'Patterns' dialog. This dialog allows you to add, update, manage, and remove patterns, providing you with greater control and flexibility in your signal timing plans.

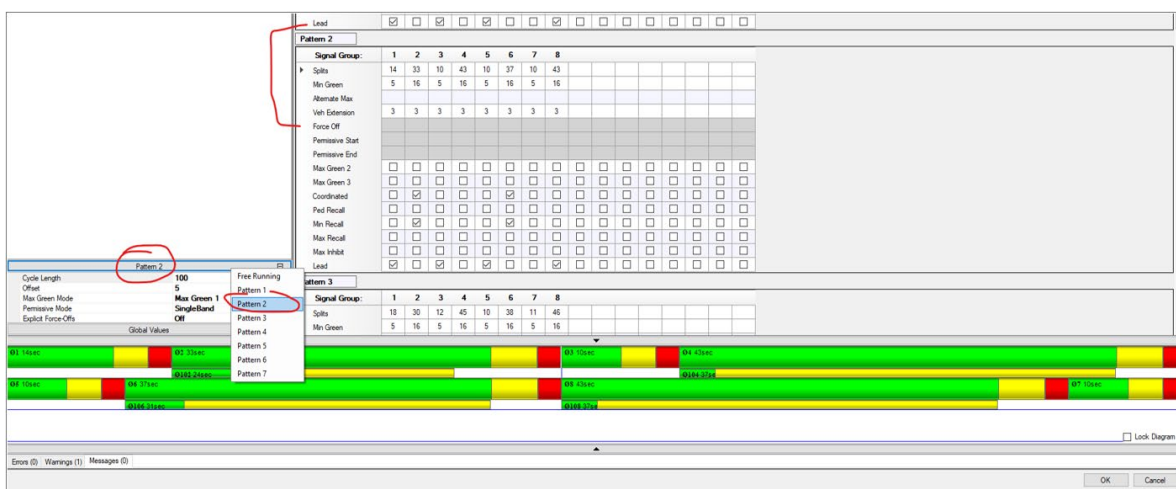


When you import UTDf/Centracs Timing Plans files, the Active Pattern control and the Patterns dialog will display the timing plans as selectable patterns.



Intersection Settings				
Priority Scheme	Minor	Minor	Major	Major
Analyze Intersection?	<input checked="" type="checkbox"/>			
Analysis Period	15 minutes			
Located in CBD	<input checked="" type="checkbox"/>			
Controller ID	1			
Signal Coordination Group	1 - Coordination Group			
Cycle Length [s]	120			
Active Pattern	Pattern 1			
Coordination Type	Free Running			
Actuation Type	Pattern 1			
Offset [s]	Pattern 2			
Offset Reference	Pattern 3			
Permissive Mode	SingleBand			

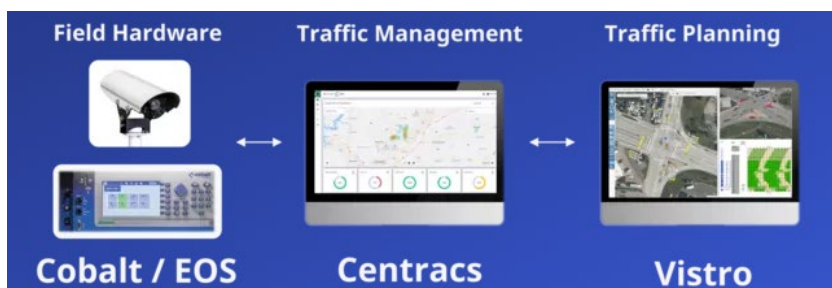
All other patterns are exported to Vissim and Visum for further analysis and setup of multiple-pattern simulations.



### 3.2 Centrac's Import/Export

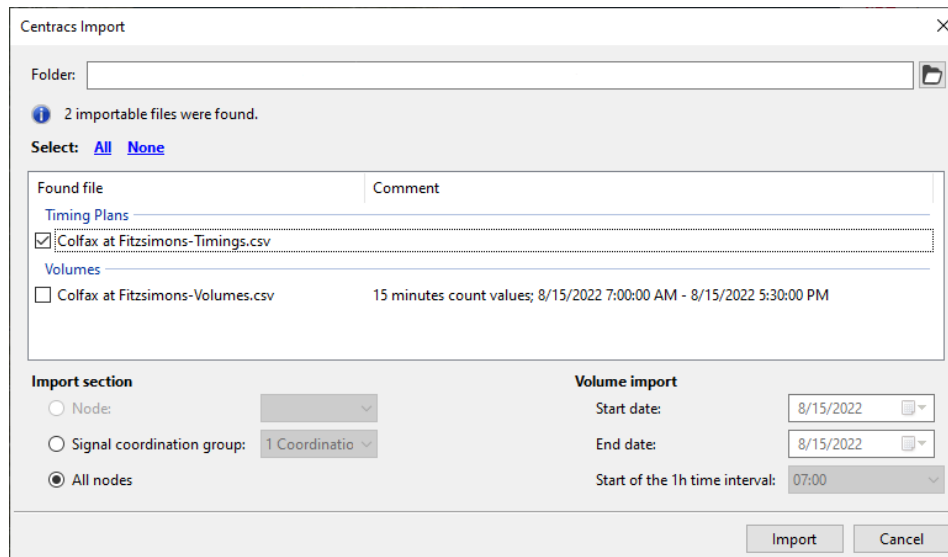
The integration of Vistro and Centrac's creates a seamless system that rapidly synchronizes field timing plans and new timing scenarios. This integration simplifies the process of importing Centrac's signal timings, including multiple patterns, directly into Vistro for quick setup and analysis. It eliminates the need for time-consuming configurations and fragmented assessments. In Vistro, you can analyze and send all newly optimized timing patterns back to Centrac's for immediate field deployment, ensuring that your traffic signal data stays up to date in your management and modeling software. This empowers you to make informed decisions with the latest information.

With this connection, there's no need for manual entry of signal timing parameters and schedules. The Centrac's-Vistro integration effortlessly provides a wide range of traffic signal time-of-day patterns and timings, ensuring top-notch traffic management.



In the 'File > Import' menu, you now have a new option labeled 'Centracs' for importing phasing and timing data, which includes splits, cycle lengths, and offsets, from Econolite Centracs. Users can specify their preferences for importing files and intersection data.

Exporting signal timing plans from Vistro to Centracs is equally straightforward, accessible through 'File > Export.' Users have the flexibility to choose which intersections' data should be exported and whether to export all patterns or only the active one. Each intersection's data is organized into individual files within a selectable destination folder, with filenames containing the intersection names for easy identification.



### 3.3 Automatic adjustments to Maximum Green

In Vistro, if you change values like split, amber, all-red, or delayed vehicle green times, the software automatically ensures data consistency when exporting to Vissim for microsimulation. More precisely, Vistro automatically modifies the Maximum Green time to maintain data coherence.

However, when you use the 'Create Default Signalization' feature, Maximum Green time will now synchronize only with the splits defined in Pattern 1. This adjustment won't apply to other patterns. Users can manually enter a specific value to override this calculation if necessary.

### 3.4 Phasing & Timing *Basic* and *Active Pattern* sub-tables

We reorganized the Traffic Control workflow in Vistro to enhance the correlation of RBC signal parameters with Vissim. Specifically, we updated the order of rows for HCM analysis types. Additionally, we divided the sub-table 'Phasing & Timing' into two distinct sub-tables: 'Phasing & Timing (Basic)' and 'Phasing & Timing ("Active Pattern")'.

The 'Phasing & Timing ("Active Pattern")' sub-table now encompasses the values associated with the currently selected pattern, while the 'Phasing & Timing (Basic)' sub-table contains values that remain consistent across all patterns. The 'Active Pattern' sub-

table holds pattern-specific values or values related to the Free Running timing. It's important to note that the Vistro reports also reflect these adjustments.

The screenshot displays the Vistro Traffic Control software interface. On the left, a map shows a campus intersection with buildings and roads. The main window is divided into several sections:

- Phasing & Timing (Basic):** A table with columns for Control Type, Signal Group, and various timing parameters (e.g., Maximum Green, Amber, All red, Walk, Pedestrian Clearance, Delayed Vehicle Green, Start-Up Lost Time, Clearance Lost Time, Dual Entry, Detector, Detector Location, Detector Length, Upstream Filtering Factor).
- Phasing & Timing Pattern 1:** A table with columns for Split, Lead, Lag, and various timing parameters (e.g., Allow Lead/Lag Optimization, Minimum Green, Vehicle Extension, Coordinated, Minimum Recall, Pedestrian Recall).
- Exclusive Pedestrian Phase:** A section for configuring pedestrian phases.
- Sequence:** A table defining the sequence of signal phases (Ring 1, Ring 2, Ring 3, Ring 4).
- Visualizations:** At the bottom, there are bar charts showing signal timing sequences for different directions.

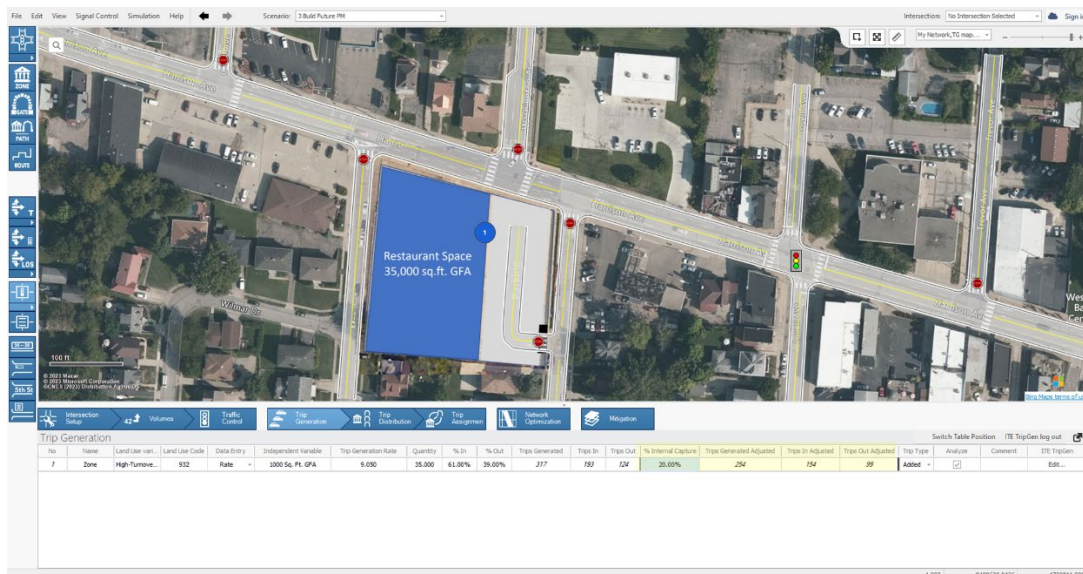
## 4 Trip Generation Workflow

### 4.1 Internal capture

Vistro has now integrated a user-friendly feature for adjusting generated trip data to consider internal trips. You can use the ITE trip generation API to import results, apply a simple internal capture rate (or any trip reduction factor), and obtain adjusted trip values without the need for external spreadsheet calculations.

In the Trip Generation workflow grid, Vistro includes a new column labeled '% Internal Capture.' This column empowers you to specify the percentage by which Zone trips, whether entered manually or retrieved from the ITE Trip Gen web application, can be reduced to account for internal trips. Moreover, three additional columns – 'Trips Generated Adjusted,' 'Trips In Adjusted,' and 'Trips Out Adjusted' – clearly demonstrate how this internal capture rate impacts overall demand. These adjusted trip values seamlessly integrate into the 'Trip Distribution' and 'Trip Assignment' workflows, ensuring a consistent data flow.

Furthermore, the generated report includes these adjusted values, serving as a valuable reference point for validating the accuracy of your trip generation data. This comprehensive approach streamlines the adjustment process and bolsters the reliability of your transportation planning and analysis tasks.



The screenshot displays the Vistro software interface. The top portion shows an aerial map with a blue polygon highlighting a 'Restaurant Space' of 35,000 sq. ft. GFA. Below the map is a data table titled 'Trip Generation' with the following columns: No., Name, Land Use cat., Land Use Code, Data Entry, Independent Variable, Trip Generation Rate, Quantity, % In, % Out, Trips Generated, Trips In, Trips Out, % Internal Capture, Trips Generated Adjusted, Trips In Adjusted, Trips Out Adjusted, Trip Type, Analyze, Comment, and ITE TripGen. The table contains one row of data for a 'Zone' with a 'High-Turnover' rate of 932, resulting in 377 trips generated, 157 trips in, 224 trips out, and 20.69% internal capture.

No.	Name	Land Use cat.	Land Use Code	Data Entry	Independent Variable	Trip Generation Rate	Quantity	% In	% Out	Trips Generated	Trips In	Trips Out	% Internal Capture	Trips Generated Adjusted	Trips In Adjusted	Trips Out Adjusted	Trip Type	Analyze	Comment	ITE TripGen
7	Zone	High-Turnover	932	Rate	1000-Sq. Ft. GFA	5.600	35,000	61.96%	38.00%	377	157	224	20.69%	294	154	99	Added			

### 4.2 ITE Trip Generation Statistics

Vistro's ITE TripGen API interface provides data statistics that inform you about the number of studies, standard deviation, and reliability of the ITE trip generation study data. This view summarizes the unique parameters and fitted-curve equation of the query for your review and includes links to the official ITE data plots.

### Graph Look Up

**Data Source:** Trip Generation Manual, 11th Ed

**Search by Land Use Code:** [Search]

**Land Use Group:** (700-799) Office

**Land Use:** 710 - General Office Building

**Land Use Subcategory:** All Sites

**Setting/Location:** General Urban/Suburban

**Independent Variable (IV):** 1000 Sq. Ft. GFA

**Time Period:** Weekday, Peak Hour of Adjacent Street Traffic, One

**Trip Type:** Vehicle

**Data Statistics:**

- Number of Studies: 232
- Avg. Num. of 1000 Sq. Ft. GFA: 399
- Average Rate: 1.44
- Standard Deviation: 0.60
- Fitted Curve Equation:  $Ln(T) = 0.83 Ln(X) + 1.29$
- R<sup>2</sup>: 0.77
- Directional Distribution: 17% entering, 83% exiting

**Enter IV Value to Calculate Trips:** 700 [Calculate]

**Data Range:** 30.00 - 1093.00

**Data Plot and Equation:**

Average Rate:  
IV value: 700, 808 (Total), 171 (Entry), 837 (Exit)

Fitted Curve:  
IV value: 700, 835 (Total), 142 (Entry), 693 (Exit)

### General Office Building (710)

**Vehicle Trip Ends vs:** 1000 Sq. Ft. GFA

**On x:** Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.

**Setting/Location:** General Urban/Suburban

**Number of Studies:** 232

**Avg 1000 Sq. Ft. GFA:** 399

**Directional Distribution:** 17% entering, 83% exiting

Average Rate	Range of Rates	Standard Deviation
1.44	0.26 - 6.20	0.60

#### Data Plot and Equation

**IV value:** 700, 808 (Total), 171 (Entry), 837 (Exit)

**Fitted Curve Equation:**  $Ln(T) = 0.83 Ln(X) + 1.29$

**R<sup>2</sup>:** 0.77

No	Home	Land Use var.	Land Use Code	Data Entry	Independent Variable	Trip Generation Rate	Quantity	% In	% Out	Trips Generated	Trips In	Trips Out	% Internal Capture	Trips Generated Adjusted	Trips In Adjusted	Trips Out Adjusted	Trip Type	Analyze	Comment	ITE TripGen log out
1	Grand Towers	General Office	710	Rate	1000 Sq. Ft. GFA	1.440	700,000	17.00%	83.00%	1000	177	827	0.00%	1000	177	827	Added	<input checked="" type="checkbox"/>	ITE 11th Ed...	Edt...
2	Cedar Inn	Hotel	310	Rate	Rooms	0.370	220,000	50.00%	50.00%	81	40	41	0.00%	81	40	41	Removed	<input checked="" type="checkbox"/>	ITE 11th Ed...	Edt...
3	Peachtree Apts	MultiFamily Hs	220	Trips	Dwelling Units	0.620	110,600	63.00%	35.00%	162	113	69	0.00%	162	113	69	Added	<input checked="" type="checkbox"/>	ITE 11th Ed...	Edt...

1:2953 -9384143.8467 3992328.6798

## 5 Graphical Editors

### 5.1 Roundabouts

In Vistro 2024, you can take advantage of improved roundabout visualization to achieve precise design and receive feedback. You have the capability to create ideal radii, splitter islands, and circular lanes. What sets Vistro apart is its unique feature that enables you to import and simulate your roundabout directly in Vissim, a top-tier simulation tool. This means that your design specifics, such as bypass lanes, turn lanes, and radii, are represented in both Vissim and Visum, simplifying the assessment of corridor mobility at various levels of detail.



### 5.2 Network visualization improvements

We have enhanced the visualization of dedicated lanes, specifically channelized or bypass lanes that do not extend to the stop line. Now, we measure the length of these lanes from the point where the movement begins to separate from the main approach. In previous versions, this measurement commenced at the stop line. This updated visualization aligns more closely with the resulting Vissim network after an export.

We've also made improvements in the display of channelized turns with dedicated target lanes. The movement now seamlessly connects to the target lane, providing a smoother representation. Target lanes using channelized turn, now are visualized with a lane continuing further downstream.

## 6 Export

### 6.1 Leading Pedestrian Intervals in Vissim

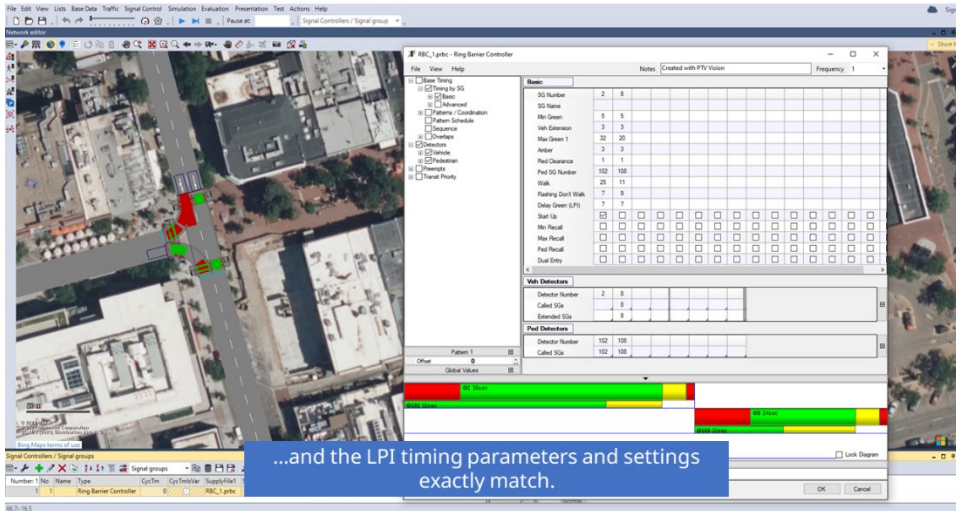
Vistro now exports Leading Pedestrian Intervals (LPI) to Vissim 2024 via ANM and to the Vissim Preview. Vistro's unique built-in functionality eliminates the need for false phases. Quickly create and correctly model your LPIs and optimize entire networks. Simulate LPIs directly in Vissim with push-button detection. These features make investigating LPIs in your next study intuitive and cost-effective.

'Delayed Vehicle Green' directly exports to Vissim's new LPI value. In previous versions of Vistro, we used to create overlaps in the PRBC file and write the value to the 'Delay Green' field of the overlap. Now, Vistro will now directly import the 'Delayed Vehicle Green' value into the 'Delay Green (LPI)' field in the Basic Timing table in Vissim, and there will be no creation of overlaps.

Delayed Vehicle Green timings create leading pedestrian intervals (LPI) in Vistro...

Control Type	Phase	Permissive	Permissive	Permissive	Permissive	Permissive
Control Type	2	-	-	-	-	8
Signal Group	2	-	-	-	-	8
Authority: Signal Groups						
Maximum Green [s]	32	0	0	0	20	
Yellow [s]	3.0	0.0	0.0	0.0	3.0	
All-Red [s]	1.0	0.0	0.0	0.0	1.0	
Walk [s]	25	0	0	0	11	
Maximum Clearance [s]	7	0.0	0.0	0.0	9	
Delayed Vehicle Green [s]	7.0	0.0	0.0	0.0	7.0	
Flash-to-Hold	0	0	0	0	0	
H. Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	2.0	
H. Clearance Lost Time [s]	2.0	0.0	0.0	0.0	2.0	
Queue Entry	0	0	0	0	0	
Detector	0	0	0	0	0	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	
Detector Length [m]	20.0	0.0	0.0	0.0	20.0	

Look at the out-of-the-box LPIs! This include both fixed-time and actuated LPIs from Vistro...

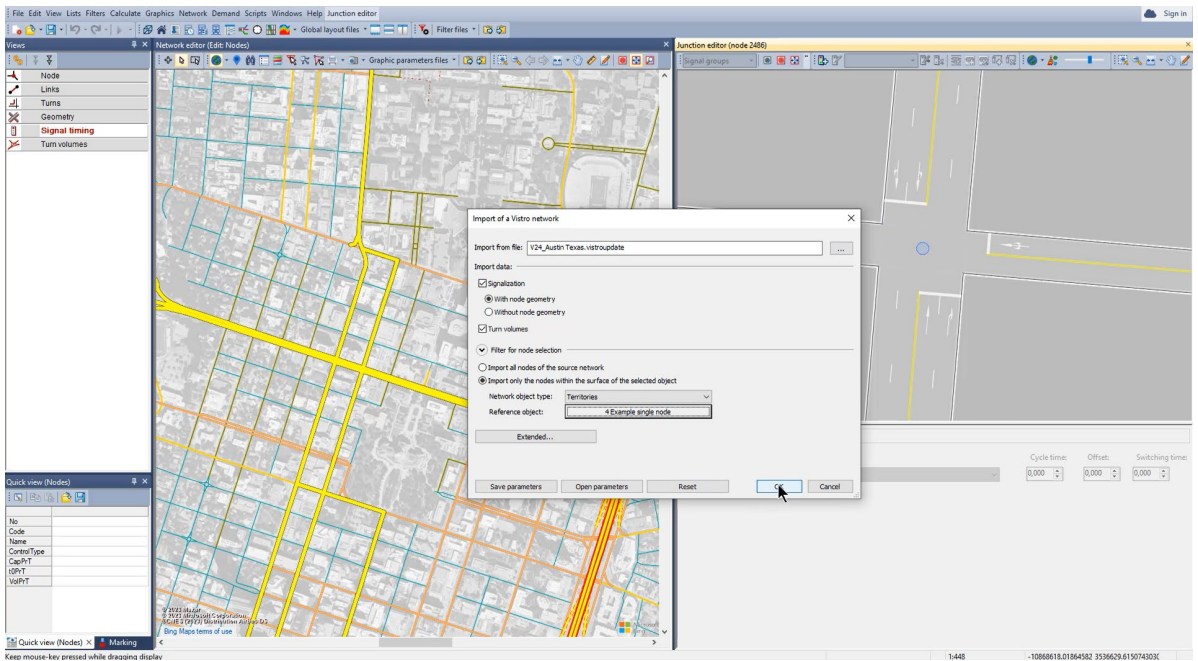


...and the LPI timing parameters and settings exactly match.

## 6.2 Vistro Merge & Update tool in Visum 2024

PTV Vistro, a leading traffic engineering tool, prioritizes user-friendly interfaces and efficient junction coding. In PTV Visum 2024, a new tool seamlessly combines junction and signal data from Vistro's merge file. You can insert multiple Vistro networks into a regional transportation model to initiate new projects or incorporate updates. This improvement simplifies the process of integrating local Vistro junction details into regional models, eliminating redundant coding and optimizing data utilization.

This functionality empowers engineers to concentrate on dedicated traffic analysis using Vistro, while planners focus on PTV Visum. PTV Vistro serves as a bridge between your agency's traffic operations and planning departments. Moreover, it stands out as the premier traffic signal optimization software, ensuring your advanced simulation tools remain well-prepared for upcoming challenges.





## 6.3 Better Vissim export of signals

We made several improvements to enhance Vissim exports and ensure consistent coordination settings for controllers in Vistro. Vistro now takes the initiative to identify startup signal groups automatically, eliminating potential warnings in Vissim. In the case of coordinated controllers lacking coordinated flags on signal groups, Vistro now generates these flags automatically. Additionally, the ICA check now highlights any disparities between the controller settings and the coordinated flags of the signal groups. Conversely, isolated controllers operating in fully actuated mode, consist of a cycle length of zero in the export.