

Creating and Editing Flowgate Data in the IDC

Purpose

The purpose of this document is to describe the displays in the IDC application for creating new Flowgates and modifying existing Flowgate data.

High-Level Flowgate Creation Process

To create a new Flowgate or edit an existing Flowgate in the IDC:

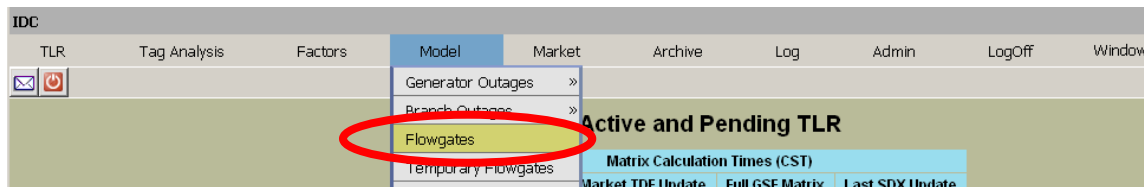
1. Navigate to the [Flowgate](#) menu and either edit an existing Flowgate or create a new Flowgate. This will bring up the [Edit Flowgate Display](#).
2. Enter the general Flowgate information in the [Base Data Section](#), making sure you understand how the [Reset and Cancel](#) buttons function.
3. Select the market entities for the Flowgate in the [Market Coordination Section](#)
4. Select the monitored branches in the [Monitored Branches Section](#)
5. If the Flowgate is an OTDF Flowgate, select the contingent elements in the [OTDF/LODF Branch Section](#)
6. [Save](#) the Flowgate

The remaining sections of this document provide details on each of the above steps.

Accessing Flowgate Information

Information on all Flowgates is accessed via the **Flowgates** option under the **Model** menu on the IDC Main Page. Note that new Flowgates created in the IDC, or changes made in the IDC to existing Flowgates, will be lost when a new Book of Flowgates is loaded into the IDC at the beginning of each month. To extend the life of a Flowgate created in the IDC, the user must navigate to the Temporary Flowgates menu item and submit changes there.

The screenshot below shows how to access the **Flowgate** menu item on the main page.



Navigate to **Flowgates** under the **Model** menu on the IDC Main Page:

- This will open the **Flowgates** display
- From the **Flowgates** display, the user selects the RC and CA for the Flowgate in question. The user may also search on a specific Flowgate number.
- Only users with Unrestricted R/W privileges can edit or create Flowgates.

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The **Flowgates** display is shown below:

Number	Description	Type	Coord	Rationale	Status	Source
310	Person-Halifax 230 kV line I/o Wake-Carson 500 kV	Rel(OTDF),LODF	YES	Thermal limit	ACTIVE	BOF
1101	6ANSONVL 230 6OAKBORO 230	Rel(OTDF),LODF	NO	Thermal Reliability	ACTIVE	BOF
1102	6SUMTER 230 6WATEREE 230	Rel(OTDF),LODF	NO	Thermal Reliability	ACTIVE	BOF
1103	6KINGSTR 230 6KINGSTRE 230	Rel	NO	Thermal Reliability	ACTIVE	BOF
1104	3TUPPERWV 115 3HEMING1 115	Rel(OTDF),LODF	NO	Thermal Reliability	ACTIVE	BOF
1105	3KINGSTR 115 3SUMTER 115 99	Rel(OTDF),LODF	NO	Thermal Reliability	ACTIVE	BOF

Selecting the Flowgate **Number** hyperlink will bring up the **Flowgate Summary** display shown below

Flowgate: 310 - Person-Halifax 230 kV line I/o Wake-Carson 500 kV

Type: Rel(OTDF),LODF Rationale: Thermal limit **Edit Flowgate** Delete Cancel

Owners

Reliability Coordinator	Control Area	Transmission Provider
PJM	PJM	PJM
VACS	CPLE	CPL

Market Coordination

Market
PJM

Monitored Branches

From Bus	To Bus	Tertiary Bus	Circuit
6PERSON 230	6HALIFAX 230	N/A	1

OTDF Contingency Branches

From Bus	To Bus	Tertiary Bus	Circuit	Contingency Status
8WAKE 500	8CARSON 500	N/A	1	Switch Off

LODF Contingency Branches

From Bus	To Bus	Tertiary Bus	Circuit
8WAKE 500	8CARSON 500	N/A	1

Selecting the **Edit Flowgate** button will bring up the **Edit Flowgate** display described in the next section.

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The Edit Flowgate Display

The same data entry screen is used and the same data entry rules apply to both editing an existing Flowgate and creating a new Flowgate. Therefore, the screens and description are provided generically here for all Flowgate data entry.

The **Edit Flowgate** display will open with all information in compressed form. The **Save Flowgate**, **Reset** and **Cancel** buttons appear at both the top and bottom of the screen for user convenience. The top set of buttons and the bottom set of buttons perform exactly the same functions.

The **Edit Flowgate** display is shown below

OATI Edit Flowgate : 1205

Save Flowgate Reset Cancel

If creating a new Flowgate, this area will say
Create Flowgate

+ Base Data:
+ Market Coordination:
+ Monitored Branches:
+ OTDF/LODF Branches:

Clicking the "+" sign will expand each data set

Save Flowgate Reset Cancel

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The Reset and Cancel Buttons

At any time during creation or editing of existing Flowgate data, the user may reset the data on the screen. There are two options for resetting data:

1. The red **Reset** button. Poking this button resets data for all sections in the **Edit Flowgate** display.
 - a. If the user pokes the red **Reset** button during the creation of a new Flowgate, all the entered data will be wiped out in all data sections.
 - b. If the user pokes the red **Reset** button during the editing of an existing Flowgate, all entered data will revert to the previously saved version of the Flowgate for all data sections.
2. The blue *reset* hyperlink is present when creating a new Flowgate. Poking this hyperlink resets data only for that particular data section.
 - a. If the user pokes the blue *reset* button during the creation of a new Flowgate, all the entered data will be wiped out in that particular data section.
 - b. If the user pokes the blue *reset* button during the editing of an existing Flowgate, all entered data will revert to the previously saved version of the Flowgate for that particular data section.
3. At any time during creation or editing of existing Flowgate data, the user may cancel the editing altogether and exit the Flowgate editing screens

The screenshot below highlights the reset buttons.

The screenshot shows the 'Create Flowgate' interface. At the top right, there are buttons for 'Save Flowgate', 'Reset', and 'Cancel'. The 'Base Data' section is highlighted in orange and contains the following fields:

- Type: Rel (selected)
- Rationale: Thermal (selected)
- Description: Test Flowgate
- RC: SOCO, CA: AEC, TP: AEC

Below these fields is a table with columns RC, CA, TP, and Action. The table contains one row: SOCO, AEC, AEC, and a 'Delete' button.

At the bottom left, there are expandable sections for 'Market Coordination', 'Monitored Branches', and 'OTDF/LODF Branches'. At the bottom right, there are buttons for 'Save Flowgate', 'Reset', and 'Cancel'.

Two red callouts highlight specific reset options:

- A callout pointing to the 'Reset' button at the top right says: "Resets data on entire Flowgate".
- A callout pointing to the '[reset]' hyperlink in the top right corner of the 'Base Data' section says: "Resets data in local section only".

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The Base Data Section

The following rules apply to data entry in the Base Data section:

Type	<ul style="list-style-type: none"> Reliability or Informational must be selected. Note that TLRs cannot be called on Informational Flowgates. If Reliability is selected, Informational cannot be selected
Rational	<ul style="list-style-type: none"> At least one checkbox must be selected from thermal, voltage, or stability All checkboxes are independent of each other
Description	<ul style="list-style-type: none"> This is the name of the Flowgate that will appear on the summary screen
Entities	<ul style="list-style-type: none"> Select the appropriate Reliability Coordinator, Control Area, and Transmission Provider from the dropdowns and poke the Add button. Doing so will populate the lower table with that RC, CA, TP entry. Repeat for additional RC, CA, TP entities. Note that the tie line example below contains two entities. The Reliability Coordinator of the current user must be one of the selected entities

The screenshot below shows the **Base Data** section

Create Flowgate

Save Flowgate Reset Cancel

Base Data:

Type: Rel Reliability Informational

Rationale: Thermal Thermal Voltage Stability

Description:

RC: CA: TP:

RC	CA	TP	Action
VACS	DUK	DUK	<input type="button" value="Delete"/>
SOCO	SOCO	GTC	<input type="button" value="Delete"/>

Market Coordination:

Monitored Branches:

OTDF/LODF Branches:

Save Flowgate Reset Cancel

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The Market Coordination Section

The following rules apply to data entry in the Market Coordination section:

- Areas must have agreed to the market coordination aspects of the Flowgate before this information is entered in the IDC.
- If the Flowgate is not a Market Coordinated Flowgate, skip this section.
- To enter the Market Coordination entity, choose the entity from the dropdown list and poke the **Add** button. The entity will then appear in the lower table of the data section. Enter data as appropriate.

The screenshot below shows the **Market Coordination** section

The screenshot shows a web interface titled "Create Flowgate". At the top right, there are three buttons: "Save Flowgate", "Reset", and "Cancel". Below this, there are three expandable sections: "Base Data:", "Market Coordination:", and "Monitored Branches:". The "Market Coordination:" section is currently expanded, showing a form with a "Market:" dropdown menu set to "MISO" and an "Add" button. Below this is a table with the following structure:

Market	TLR % Threshold	Market Agreement	Action
MISO	0.0	NO	Delete

Below the table, there are two more expandable sections: "Monitored Branches:" and "OTDF.LODF Branches:". At the bottom right of the interface, there are three buttons: "Save Flowgate", "Reset", and "Cancel".

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The Monitored Branches Section

A few items of note regarding the Monitored Branches section:

- Since the IDC is based on a PSS/E Powerflow model, the branches selected in the Monitored Branches section will contain the PSS/E names. The field selections in this section assist the user in navigating the PSS/E model to identify the desired branches.
- There must be at least one Monitored Branch selected in order for a Flowgate to be saved.
- Monitored branches are directional. Selecting the proper **From Bus** and **To Bus** are of utmost importance. Flowgates are defined in a specific direction.

To select the monitored branches, do the following:

1. From the **Bus CA** dropdown, select the Control Area in which the branch resides. Note that the Control Areas shown in this dropdown are populated from those selected in the Base Data section.
2. From the **Bus kV** dropdown, select the voltage of the monitored branch.
3. From the **Bus** dropdown box (the righthand box), select the bus from which the monitored branch emanates. You can type a portion of the name of the bus in the left hand box to filter the buses that appear in the right hand box.
4. Poke the **View Branch** button. This will list all branches that are attached to this bus in a table to the right. It is important to note that every branch attached to this bus appears in this list twice...once in each direction. The user should use the scroll bar and thoroughly scour the list of branches to ensure that he is selecting the **From Bus** and **To Bus** to achieve the proper direction of flow.
5. Select the desired **Add** checkboxes and then select the **Add** button to the right of the table. Doing so will populate the lower table with these monitored branches.

The screenshot below shows the **Monitored Branches** section

Base Data: +
Market Coordination: +
Monitored Branches: -

Bus CA: DUK Bus KV: 500.00 Bus: mc 8MCGUIRE 500.00 View Branch

From Bus	To Bus	Tertiary	Circuit	Add
8MCGUIRE 500.00	8MCGUIRE 500.00	N/A	1	<input type="checkbox"/>
8MCGUIRE 500.00	8MCGUIRE 230.00	N/A	A1	<input type="checkbox"/>
8MCGUIRE 500.00	8SANTIOCH 500.00	N/A	1	<input checked="" type="checkbox"/>
8MCGUIRE 500.00	8JOCASSE 500.00	N/A	1	<input type="checkbox"/>

From Bus	To Bus	Tertiary	Circuit	Action
8MCGUIRE 500.00	8SANTIOCH 500.00	N/A	1	Delete

OTDF/LODF Branches: +

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The OTDF/LODF Branch Section

A few items of note regarding the OTDF/LODF Branch section:

- Outage Transfer Distribution Factor (OTDF) Flowgates are Flowgates that take into account a predefined contingency during curtailment evaluation. With OTDF Flowgates the monitored branches are considered with a specific facility removed from service during curtailment evaluation.
- Since the IDC is based on a PSS/E Powerflow model, the branches selected in the OTDF/LODF Branch section will contain the PSS/E names. The field selections in this section assist the user in navigating the PSS/E model to identify the desired branch.
- The data in this section is optional and is not required to save a Flowgate
- **OTDF** Contingency branches are not directional. **OTDF** contingencies are not defined in a specific direction.
- Line Outage Distribution Factor (**LODF**) represents the percentage of flow on a contingent facility that will flow on the monitored branches, if the contingent facility is outaged. The calculation of an LODF is optional for OTDF branches.
- **LODFs** are not used in IDC TLR calculations. **LODFs** do not affect the Flowgate in any way – they are only supplied to the user as information and are used in assisting the RCs in filling the NERC TLR Report.
- **LODFs** are calculated using the following formula: Post Contingency Flow on Monitored Element = Pre Contingency Flow on Monitored Element + (Pre Contingency Flow on Contingent Element)*LODF

To select the OTDF Contingency branches, do the following:

1. From the **Bus CA** dropdown, select the CA in which the contingency branch resides. Note that the Control Areas shown in this dropdown are not dependent on the Control Areas selected in the Base Data section
2. From the **Bus kV** dropdown, select the voltage of the contingency branch.
3. From the **Bus** dropdown box (the righthand box), select the bus from which the contingency branch emanates. You can type a portion of the name of the bus in the left hand box to filter the buses that appear in the right hand box.
4. Poke the **View Branch** button. This will list all branches that are attached to this bus in a table to the right. It is important to note that every branch attached to this bus appears in this list only once since OTDF contingencies are not directional...this is different from the Monitored Branch section.
5. Select the desired **Add** checkboxes and then select the **Add** button to the right of the table. Doing so will populate the lower table with these OTDF contingency branches.
6. Ensure that the proper Action button (*in* or *out*) is chosen for this

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contingency definition.

7. If you want an LODF calculated for this Flowgate, select the **Normal** or **Reverse** button. Note that an LODF can be calculated for only one OTDF contingency branch. Since LODFs are calculated from a formula rather than being evaluated as an outage, LODF branches are directional. Selecting the proper **From Bus** and **To Bus** are of utmost importance. This means that the user must know the expected direction of flow on the contingent branch when defining an LODF Contingency branch.

The screenshot below shows the **OTDF/LODF Branch** section:

Base Data:
Market Coordination:
Monitored Branches:
OTDF/LODF Branches:

Bus CA: DUK Bus KV: 230.00 Bus: 6ALLEN 230.00 View Branch

From Bus	To Bus	Tertiary	Circuit	Add	Ad
6ALLEN 230.00	6RIVRBEN 230.00	N/A	2	<input checked="" type="checkbox"/>	
6ALLEN 230.00	6MNECOF 230.00	N/A	1	<input type="checkbox"/>	
6ALLEN 230.00	6MNECOF 230.00	N/A	2	<input type="checkbox"/>	


From Bus	To Bus	Tertiary	Circuit	IN/OUT	LODF	Action
6ALLEN 230.00	6CATAWBA 230.00	N/A	1	<input type="radio"/> IN <input checked="" type="radio"/> OUT	<input type="radio"/> No <input type="radio"/> Normal <input checked="" type="radio"/> Reverse	Delete
6ALLEN 230.00	6RIVRBEN 230.00	N/A	2	<input type="radio"/> IN <input checked="" type="radio"/> OUT	<input checked="" type="radio"/> No <input type="radio"/> Normal <input type="radio"/> Reverse	Delete

An LODF will be calculated for this OTDF contingency. Since the pre-contingency flow is from Catawba to Allen, the reverse button is poked.

Save Flowgate Reset Cancel

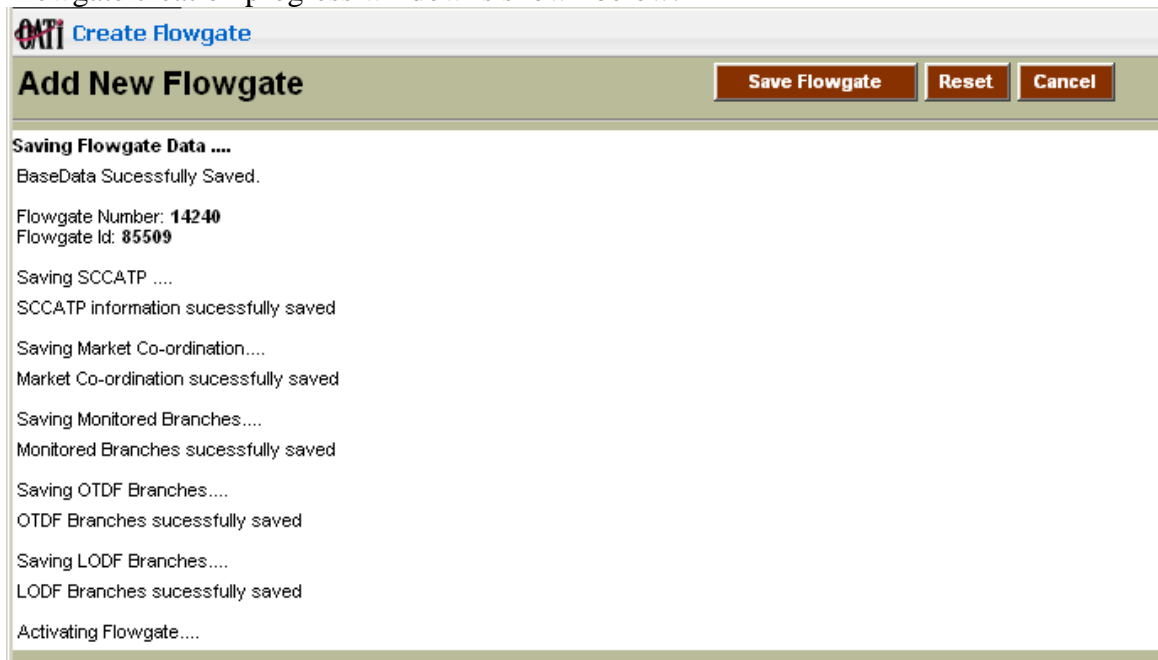
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Saving Flowgate Information

Once the user has entered all desired information, poke the Save Flowgate button, . A new window will flash on the screen showing the progress of that save. Once the save is complete, the progress window will close itself and a Flowgate Summary display for the newly edited/created Flowgate will appear. Review the Flowgate Summary display for correctness and close the window. The new Flowgate now exists in the IDC as a Temporary Flowgate and will become effective at the next Transfer Distribution Factor (TDF) matrix calculation.

If entered data is incorrect, an error box will appear highlighting what needs to be corrected.

Flowgate creation progress window is shown below:



The newly added/edited Flowgate will now appear in the Flowgate list and will be available for use at the next matrix calculation.

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A sample **Flowgate Summary** display is shown below.

Flowgate 13612 Summary

Flowgate: 13612 - test fg

Type: Rel Rationale: Thermal **Edit Flowgate** **Delete** **Cancel**

Owners

Reliability Coordinator	Control Area	Transmission Provider
VACS	DUK	DUK

Market Coordination

Market

None

Monitored Branches

From Bus	To Bus	Tertiary Bus	Circuit
05J.FERR 500	8ANTIOCH 500	N/A	1

OTDF Contingency Branches

From Bus	To Bus	Tertiary Bus	Circuit	Contingency Status
6BELLVIL 230	6ARN230 230	N/A	1	Switch Off

LODF Contingency Branches

From Bus	To Bus	Tertiary Bus	Circuit
6ARN230 230	6BELLVIL 230	N/A	1