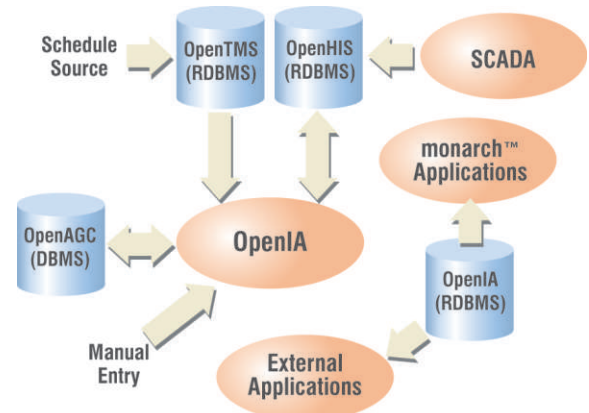


OpenIA

Inadvertent Accounting

Inadvertent Interchange, if not accounted for correctly, can significantly affect the bottom-line of Operations in both a financial and compliance sense. The concept is simple: monitor the difference between a net actual and net planned interchange. However, keeping track of the details of the ultimate net can be a daunting task given the potential number of entities and tie points with which energy exchanges are made.

OpenIA™ provides a Web-based Graphical User Interface (GUI) that is simple and elegant. All net scheduled and actual interchange information is viewed within a single browser window that supports multiple simultaneous view panels. Through this GUI, the user is able to view several layers of the inadvertent situation. A system-level view exposes only an hourly report of the system-wide inadvertent per primary control authority. More detailed information can be found in reports that summarize the errors on a per-interchange entity and per-tie basis. Information overload is avoided through the use of pre-defined and user-defined views that provide powerful filtering, allowing the user to quickly focus on exchange entities of interest. These same reports can be used to perform manual after-the-fact corrections that are automatically propagated through each forward hour's inadvertent value.



OpenIA System Interfaces

OpenIA provides up-to-the-hour inadvertent information to the Automatic Generation Control (**OpenAGC™**) function for real-time implementation of unilateral payback. Additionally, for users who reside in the Western Electric Coordinating Council (WECC) footprint, **OpenIA's** core algorithm is able to compute Primary Inadvertent values that are imposed into the Area Control Error (ACE) equation for a combined effect of inadvertent payback and time error correction.

Open Systems 1																	
Inadvertent																	
Mon 07/30/2007																	
Tie Lines																	
HE	Tie Line 1			Tie Line 2			In	Out	Net	Summary							
	In	Out	Net	In	Out	Net				HE	Actual	Scheduled	Hourly	Δ	On Peak	Off Peak	
1	-98.8	47.1	-51.7	-47.1	0.2	-46.9	-0				1	-51.7	-60	8.3	0	8.3	
2	-47.7	65	17.3	-65	47.7	-17.3	-47				2	-47.7	-60	12.3	-11.4	0	9.2
3	-97.5	90.2	-7.3	-90.2	48.2	-42	-97				3	-56.6	-60	3.4	0	0	12.6
4	-97.1	69.2	-27.9	-69.2	51	-18.2	-97				4	-73.9	-60	-13.9	0	0	-1.3
5	-48.8	26.8	-21.9	-26.8	48.8	21.9	-90				5	-70	-60	-10	0	0	-11.3
6	-4.8	60.5	65.7	-60.5	4.8	-55.7	-83				6	-59.7	-60	0.3	0	0	-1.1
7	-39.1	76.5	37.4	-76.5	39.1	-37.4	-72				7	-71.9	-60	8.1	0	0	8.1
8	-42.4	18.7	-23.7	-18.7	42.4	23.7	-74				8	-73.4	-60	6.6	-6.3	8.5	-1.1
9	-67.9	2.1	-65.9	-2.1	52.5	31.5	-89				9	-86.4	-60	-18.3	-9.9	0	-1.1
10	-92.2	19.6	-72.6	-19.6	92.2	72.6	-92				10	-92.1	-60	-12.1	19.3	-2.8	-1.1
11	-4.7	83.2	78.5	-83.2	4.7	-78.5	-90				11	-89.5	-60	-9.5	4.6	-7.7	-1.1
12	-19.4	3	-16.4	-3	19.4	16.4	-91				12	-90.8	-60	-10.8	-18.5	-1.1	-1.1
13	-75.6	26.2	-49.4	-26.2	75.6	49.4	-75				13	-75.6	-60	4.4	0	0	-1.1
14	-38.7	77.1	38.4	-77.1	38.7	-38.4	-67				14	-66.2	-60	-13.9	-0.3	0	-1.1
15	-13	94.8	81.8	-94.8	13	-81.8	-45				15	-44.6	-60	15.4	0	0	-1.1
16	-37.8	97	59.2	-97	37.8	-59.2	-41				16	-41	-60	19	-17.2	17	-1.1
17	-62.2	44.5	-17.7	-44.5	62.2	17.7	-62				17	-62.2	-60	-2.1	0	0	-1.1
18	-12	53.7	41.7	-53.7	12	-41.7	-65				18	-65	-60	-5	0	0	-1.1
19	-4.2	48.3	44	-48.3	4.2	-44	-63				19	-62.2	-60	-2.2	0	0	-1.1
20	-69.5	29.4	-40.1	-29.4	69.5	40.1	-69				20	-69.5	-60	-9.5	-1.8	0	-1.1
21	-4.7	48.3	43.6	-48.3	4.7	-43.6	-52				21	-51.9	-60	8.1	-1.8	0	-1.1
22	-56.4	70	13.7	-70	56.4	-13.7	-56				22	-56.4	-60	3.6	0	0	-1.1
23	-10.3	45.2	34.9	-45.2	10.3	-34.9	-71				23	-71	-60	-11	-1.8	0	-10.2
24	-28.3	63.1	34.8	-63.1	28.3	-34.8	-68				24	-67.8	-60	-7.8	-1.8	0	-1.1

Continued

Significant features of **OpenIA** include:

- Seamless integration with **OpenTMS™** (Transaction Management System) to retrieve schedule interchange values. Changes to schedules within **OpenTMS** can be propagated to **OpenIA** as after-the-fact adjustments
 - Seamless integration with **OpenHIS™** (Historical Information System) to retrieve tie line accumulations from history at a configurable number of minutes past the top of each hour
 - A unified GUI that pulls information from multiple sources (**OpenTMS** and **OpenHIS**) into a single view. The GUI also allows for manual adjustments
- and, in the case of meter correction, accumulator values are updated back to **OpenHIS**
- Support for the calculation of Primary Inadvertent quantities, as required by the WECC
 - Automatic delivery of inadvertent information to **OpenAGC** for real-time implementation of corrections. Deliveries are made at the top of each hour and in response to manual corrections that effect the current hour's information
 - Support for on- and off-peak time period considerations, including the definition of holidays

OpenTMS
Transaction Management System

OpenHIS
Historical Information System

OpenAGC
Automatic Generation Control

Tie Line	Tie Line 1			Tie Line 2			Summary		Inadvertent				
	In	Out	Net	In	Out	Net	Actual	Scheduled	Hourly	On Peak	Off Peak		
1	-19.8	47.1	-51.7	-47.1	0.2	-46.9	-0.1	-51.7	-60	8.3	0	8.3	
2	-47.7	65	17.3	-65	47.7	-17.3	-47	-47.7	-60	12.3	-11.4	0	9.2
3	-97.5	90.2	-7.3	-90.2	48.2	-42	-97	-96.6	-60	3.4	0	12.6	
4	-97.1	69.2	-27.9	-69.2	51.1	-18.2	-97	-73.9	-60	-13.9	0	-1.3	
5	-48.8	26.8	-21.9	-26.8	48.8	21.9	-90	-70	-60	-10	0	-11.3	
6	-4.8	60.5	55.7	-60.5	4.8	-55.7	-63	-59.7	-60	0.3	0	-1.1	
7	-39.1	76.5	37.4	-76.5	39.1	-37.4	-72	-71.9	-60	8.1	8.1	-1.1	
8	-42.4	19.7	-22.7	-19.7	42.4	22.7	-74	-73.4	-60	6.6	-6.3	9.5	-1.1
9	-67.9	21	-46.9	-21	67.5	31.5	-83	-98.4	-60	-18.3	-9.9	-1.1	
10	-92.2	19.6	-72.6	-19.6	92.2	72.6	-92	-92.1	-60	-12.1	19.3	-2.8	-1.1
11	-4.7	83.2	78.5	-83.2	4.7	-78.5	-90	-89.5	-60	-9.5	4.6	-7.7	-1.1
12	-19.4	3	-16.4	-3	19.4	16.4	-91	-90.8	-60	-10.8	-14	-18.5	-1.1
13	-75.6	26.2	-49.4	-26.2	75.6	49.4	-75	-75.6	-60	4.4	-1.4	-1.1	
14	-38.7	77.1	38.4	-77.1	38.7	-38.4	-67	-66.2	-60	13.8	-0.5	-0.1	
15	-13	94.8	81.8	-94.8	13	-81.8	-45	-44.6	-60	15.4	15.1	-1.1	
16	-37.8	97	59.2	-97	37.8	-59.2	-41	-41	-60	19	-17.2	17	-1.1
17	-62.2	44.5	-17.7	-44.5	62.2	17.7	-62	-62.2	-60	-2.1	14.8	-1.1	
18	-12	93.7	81.7	-93.7	12	-81.7	-69	-69	-60	3.6	9.8	-1.1	
19	-4.2	48.3	44	-48.3	4.2	-44	-63	-62.2	-60	-2.2	7.7	-1.1	
20	-69.5	29.4	-40.1	-29.4	69.5	40.1	-69	-69.5	-60	-9.5	-1.8	-1.1	
21	-4.7	48.3	43.6	-48.3	4.7	-43.6	-52	-51.9	-60	8.1	-1.8	-2.9	
22	-56.4	70	13.7	-70	56.4	-13.7	-56	-56.4	-60	3.6	-1.8	0.8	
23	-10.3	45.2	34.9	-45.2	10.3	-34.9	-71	-71	-60	-1.1	-1.8	-10.2	
24	-28.3	63.1	34.8	-63.1	28.3	-34.8	-68	-67.8	-60	-7.8	-1.8	-1.8	