

# Michigan-Ontario PAR Operations

Joint and Common Market

May 10, 2013

# Michigan-Ontario PARs Overview

- Started coordinated interface operations on April 5, 2012
  - Some initial start-up challenges at first
  - Not all PARs in service all of the time resulting in less than optimal loop flow control
- All PARs in service after July 18<sup>th</sup>, 2012
  - All PAR's consistently in service resulting in full control
- Interface control capability of PARs (collectively)
  - Normally operated to control actual flow equal to scheduled flow ( $\pm 200$  MW)
  - Able to fully control interface ~96-98% of the time
  - Provides significant degree of control all of the time
    - Observed to be up to approximately 700-800 MW in either direction
  - Normally limited by operational limitations of the PARs or local transmission facilities

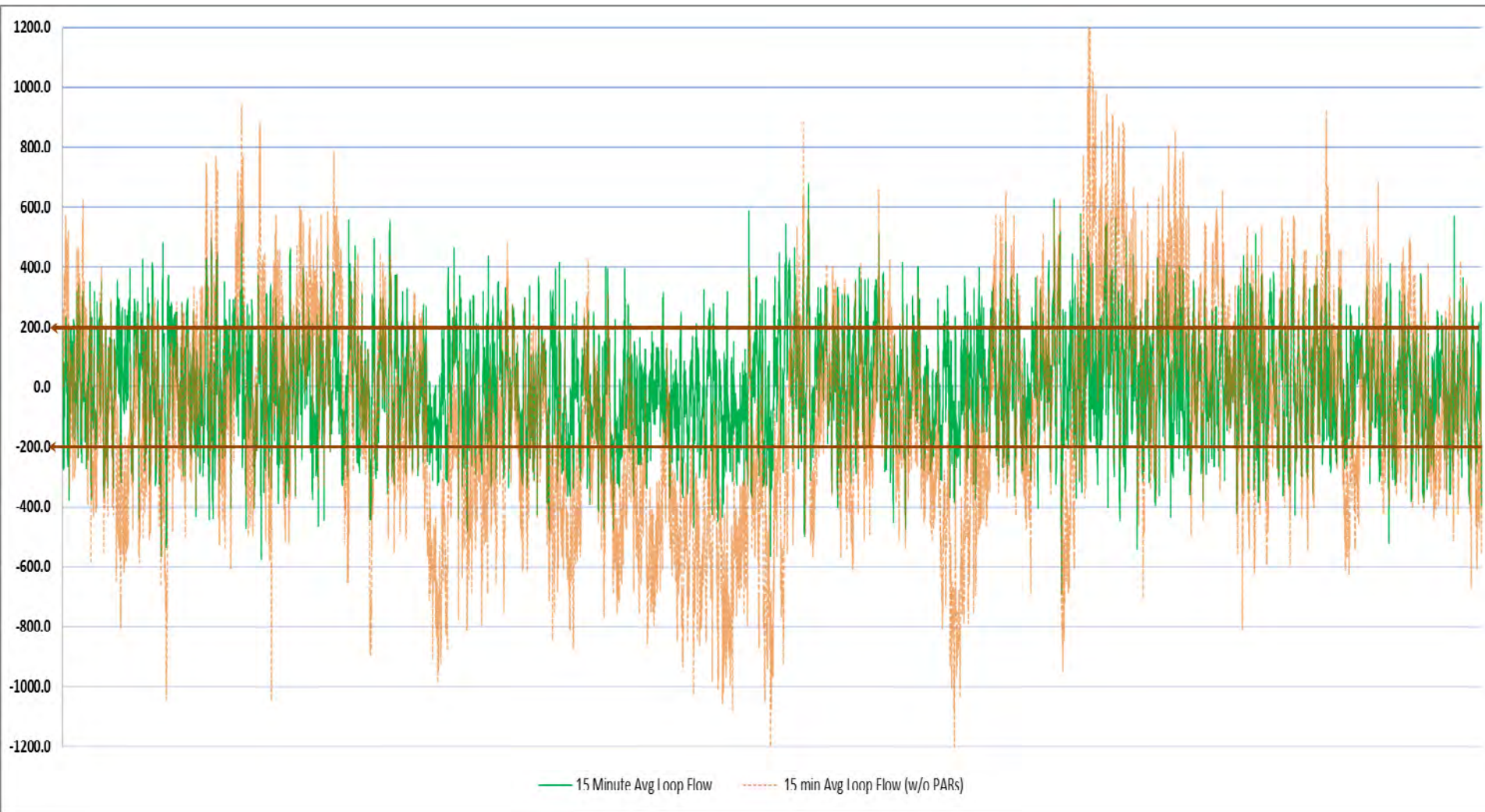
# Loop Flow Managed (Aug 2012 – Mar 2013)

- **Loop Flow reduced in direction and magnitude**
  - Predominantly clock-wise direction eliminated
  - On average, significant loop flow practically eliminated
  - Maximum observed correction of 834 MW
  - Periods with significant loop flow (>200) decreased
    - 49% during Aug 2011 – Mar 2012 period
    - 17% during Aug 2012 – Mar 2013 period

	Direction (% Time)		Loop Flow <sup>1</sup> (Avg. MW)		PAR Correction <sup>1</sup> (Avg. MW)		Loop Flow (Max MW)		PAR Correction <sup>1</sup> (Max MW)		Loop Flow > 200 MW
	CW	CCW	CW	CCW	CW	CCW	CW	CCW	CW	CCW	
Aug-Mar 2012	61%	39%	353	404	-----	-----	967	1092	-----	-----	49%
Aug-Mar 2013	50%	50%	285	295	340	308	761	790	834	724	17%
IDC Regulated							Time inside dead band				
96.4%							82.8%				



# Interface Trend (Aug 2012 – Mar 2013)



# Loop Flow Managed (April 2013)

- **Loop Flow reduced in direction and magnitude**
  - Predominantly counter clock-wise direction eliminated
  - Loop flow reduced
  - Maximum observed correction of 600 MW
  - Periods with significant loop flow (>200) decreased
    - 53% without PAR control
    - 17% with PAR control

	Direction (% Time)		Loop Flow (Avg. MW)		PAR Correction (Avg. MW)		Loop Flow (Max MW)		PAR Correction (Max MW)		Loop Flow > 200 MW
	CW	CCW	CW	CCW	CW	CCW	CW	CCW	CW	CCW	
W/O PARs	31%	69%	200	257	-----	-----	852	800	-----	-----	54%
With PARs	50%	50%	132	133	220	198	609	538	609	539	17%
			IDC Regulated				Time inside dead band				
			96.0%				86.1%				



# Interface Trend (April 2013)

