AMERICAN TRANSMISSION COMPANY®

Helping to keep the lights on, businesses running and communities strong®

2013 Year in Review

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ATC Economic Planning

February 2014

Agenda

- Congestion Severity Index
- Top Ten Constraints
- Customer's Use of System
- Expected Net Ratepayer Benefit

Congestion Severity Index

- Measures severity of constraints through the theoretical congestion cost (upper bound)
  - Theoretical maximum number of dollars (in millions) that could have been paid into the market due to the constraint
- The Congestion Severity Index takes into account:
  1) The amount of time a constraint is bound
     - Hours for Day Ahead and 5 minute intervals for Real Time
  2) The financial impacts of the constraint during those times
     - Severity of constraint impact captured in shadow price
- $$CSI = \sum_{\text{All binding hours}} \frac{[\text{Binding Line Rating} \times \text{Shadow Price}]}{1{,}000{,}000}$$

CSI History

Year	ATC DA Severity Index	ATC RT Severity Index
2008	179.31	179.89
2009	116.39	110.23
2010	109.19	111.68
2011	91.27	78.19
2012	71.02	54.80
2013	66.90	53.31

Congestion Severity Index (CSI) measures severity of constraints through the theoretical congestion cost (an upper bound).

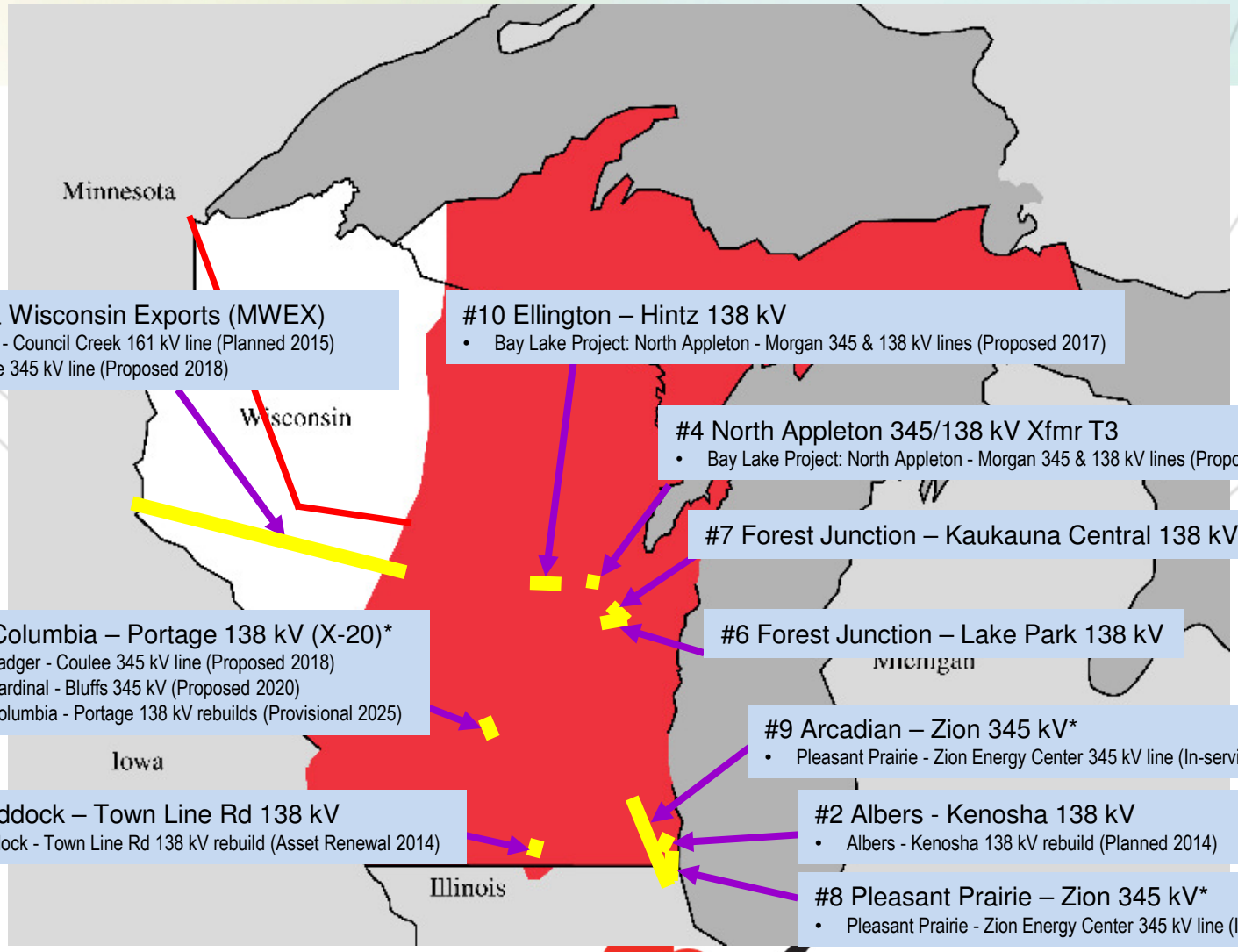
Monthly updates for ATC's congested elements are posted on ATC's OATI Oasis site:
http://www.oasis.oati.com/woa/docs/ATC/ATCdocs/market_constraints.mhtml

Day Ahead Top Ten

Severity Index	Hours	Day Ahead Element	
42.98	**2,616**	**Most limiting ATC Day Ahead constrained elements in 2013**	**Potential Solutions**
14.01	713	Minnesota to Wisconsin Exports Interface (MWEX)	Monroe County - Council Creek 161 kV line (Planned 2015) Badger - Coulee 345 kV line (Proposed 2018)
5.93	427	Albers - Kenosha 138 kV	Albers - Kenosha 138 kV rebuild (Planned 2014)
4.69	158	Columbia - Portage 138 kV (X-20)	ATC is currently investigating solutions Badger - Coulee 345 kV line (Proposed 2018) Cardinal - Bluffs 345 kV (Proposed 2020) Columbia - Portage 138 kV rebuilds (Provisional 2025)
4.52	239	North Appleton 345/138 kV Xfmr T3	Bay Lake Project: North Appleton - Morgan 345 & 138 kV lines (Proposed 2017)
2.92	251	Paddock - Town Line Rd 138 kV	Paddock - Town Line Rd 138 kV rebuild (Asset Renewal 2014)
2.65	104	Forest Junction - Lake Park 138 kV	Transmission status may have contributed to this constraint
2.58	159	Forest Junction - Kaukauna Central 138 kV	Transmission status may have contributed to this constraint
1.94	180	Pleasant Prairie - Zion 345 kV	ATC is currently investigating solutions Pleasant Prairie - Zion Energy Center 345 kV line (In-service 2013)
1.92	250	Arcadian - Zion 345 kV	ATC is currently investigating solutions Pleasant Prairie - Zion Energy Center 345 kV line (In-service 2013)
1.84	135	Ellington - Hintz 138 kV	Bay Lake Project: North Appleton - Morgan 345 & 138 kV lines (Proposed 2017)

ATC Top Ten DA Constraints

Annual 2013



#1 Minnesota Wisconsin Exports (MWEX)
- Monroe County - Council Creek 161 kV line (Planned 2015)
- Badger - Coulee 345 kV line (Proposed 2018)

#10 Ellington – Hintz 138 kV
- Bay Lake Project: North Appleton - Morgan 345 & 138 kV lines (Proposed 2017)

#4 North Appleton 345/138 kV Xfmr T3
- Bay Lake Project: North Appleton - Morgan 345 & 138 kV lines (Proposed 2017)

#7 Forest Junction – Kaukauna Central 138 kV

#6 Forest Junction – Lake Park 138 kV

#3 Columbia – Portage 138 kV (X-20)*
- Badger - Coulee 345 kV line (Proposed 2018)
- Cardinal - Bluffs 345 kV (Proposed 2020)
- Columbia - Portage 138 kV rebuilds (Provisional 2025)

#9 Arcadian – Zion 345 kV*
- Pleasant Prairie - Zion Energy Center 345 kV line (In-service 2013)

#5 Paddock – Town Line Rd 138 kV
- Paddock - Town Line Rd 138 kV rebuild (Asset Renewal 2014)

#2 Albers - Kenosha 138 kV
- Albers - Kenosha 138 kV rebuild (Planned 2014)

#8 Pleasant Prairie – Zion 345 kV*
- Pleasant Prairie - Zion Energy Center 345 kV line (In-service 2013)

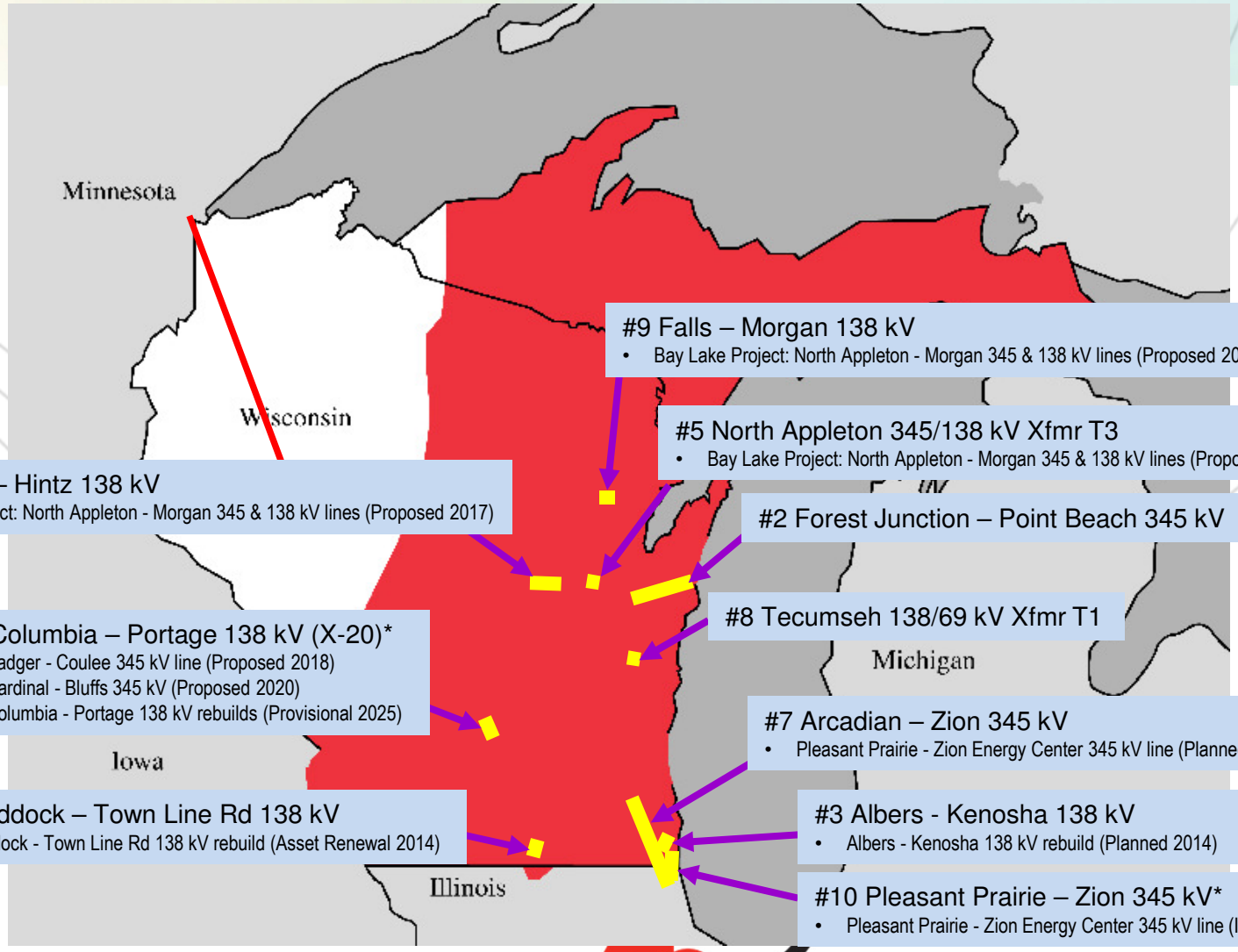
*Project solutions currently being studied

Real Time Top Ten

Severity Index	Hours	Real Time Element	
30.33	**503**	**Most limiting ATC Real Time constrained elements 2013**	**Potential Solutions**
5.39	43.4	Columbia - Portage 138 kV (X-20)	ATC is currently investigating solutions Badger - Coulee 345 kV line (Proposed 2018) Cardinal - Bluffs 345 kV (Proposed 2020) Columbia - Portage 138 kV rebuilds (Provisional 2025)
3.70	4.7	Forest Junction - Point Beach 345 kV	Transmission status may have contributed to this constraint
3.67	106.0	Albers - Kenosha 138 kV	Albers - Kenosha 138 kV rebuild (Planned 2014)
3.26	23.1	Paddock - Town Line Rd 138 kV	Paddock - Town Line Rd 138 kV rebuild (Asset Renewal 2014)
3.20	42.0	North Appleton 345/138 kV Xfmr T3	Bay Lake Project: North Appleton - Morgan 345 & 138 kV lines (Proposed 2017)
2.56	33.0	Ellington - Hintz 138 kV	Bay Lake Project: North Appleton - Morgan 345 & 138 kV lines (Proposed 2017)
2.55	63.3	Arcadian - Zion 345 kV	ATC is currently investigating solutions Pleasant Prairie - Zion Energy Center 345 kV line (In-service 2013)
2.16	102.9	Tecumseh 138/69 kV Xfmr T1	Transmission status may have contributed to this constraint
1.94	35.5	Falls - Morgan 138 kV	Bay Lake Project: Morgan - Stiles 138 kV double circuit (Proposed 2017)
1.91	49.0	Pleasant Prairie - Zion 345 kV	ATC is currently investigating solutions Pleasant Prairie - Zion Energy Center 345 kV line (In-service 2013)

ATC Top Ten RT Constraints

Annual 2013



#9 Falls – Morgan 138 kV
- Bay Lake Project: North Appleton - Morgan 345 & 138 kV lines (Proposed 2017)

#5 North Appleton 345/138 kV Xfmr T3
- Bay Lake Project: North Appleton - Morgan 345 & 138 kV lines (Proposed 2017)

#6 Ellington – Hintz 138 kV
- Bay Lake Project: North Appleton - Morgan 345 & 138 kV lines (Proposed 2017)

#2 Forest Junction – Point Beach 345 kV

#8 Tecumseh 138/69 kV Xfmr T1

#1 Columbia – Portage 138 kV (X-20)*
- Badger - Coulee 345 kV line (Proposed 2018)
- Cardinal - Bluffs 345 kV (Proposed 2020)
- Columbia - Portage 138 kV rebuilds (Provisional 2025)

#7 Arcadian – Zion 345 kV
- Pleasant Prairie - Zion Energy Center 345 kV line (Planned 2013)

#4 Paddock – Town Line Rd 138 kV
- Paddock - Town Line Rd 138 kV rebuild (Asset Renewal 2014)

#3 Albers - Kenosha 138 kV
- Albers - Kenosha 138 kV rebuild (Planned 2014)

#10 Pleasant Prairie – Zion 345 kV*
- Pleasant Prairie - Zion Energy Center 345 kV line (In-service 2013)

*Project solutions currently being studied

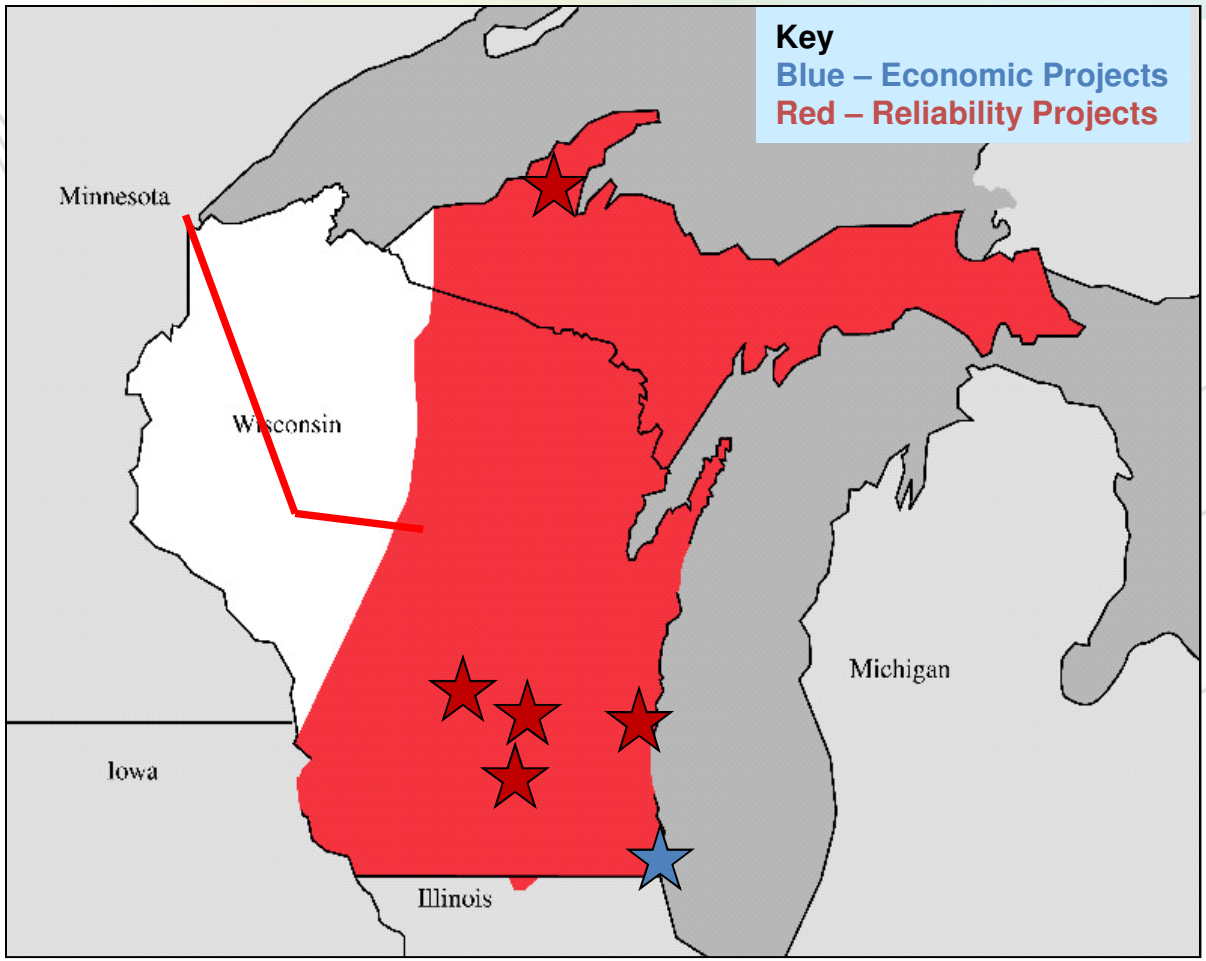
ATC Customers Use of System

ATC Customer Use of Transmission System: Energy Flow Summary							
Interface Import Hours%	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
ATC Net	99%	97%	92%	89%	85%	86%	79%
Western Interface	89%	90%	93%	92%	92%	89%	82%
Southern Interface	93%	85%	72%	53%	57%	63%	59%
Northeast (MI) Interface*	86%	77%	80%	95%	96%	99.9%	99.5%

In 2013
- ATC imported approximately 5.1 Million MWh (↓ ~20%)
- ATC exported approximately 800,000 MWh (↑ ~50%)

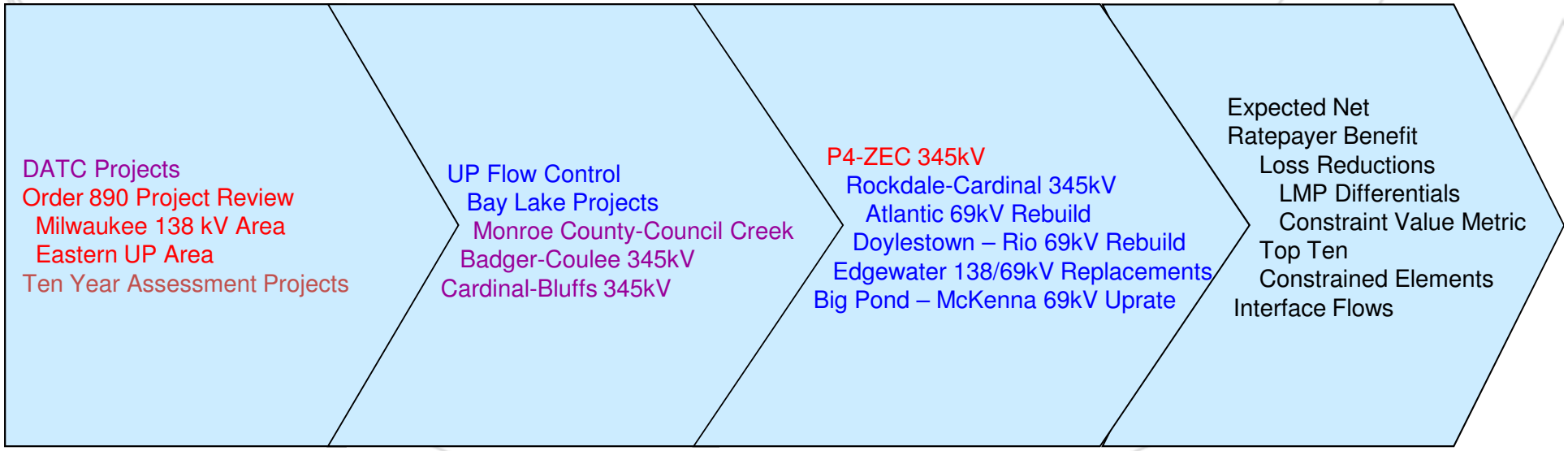
*Split UP system is contributing to import
All data above from hourly sampled data

2013 In-Service Projects
Net Ratepayer Benefit



- Reliability and Economic projects that impact market
- Projects provided $4.06 million in 2013 due to reduced energy costs and losses
- Forecasting ongoing savings at the 2013 level, approximately 21.4% of project costs are offset

Project Process Pipeline
For Economics of Transmission Projects



Key
Red – Economic Transmission Projects
Purple – Reliability, Economic and Public Policy
Blue – Reliability Transmission Projects

Contact Information

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