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# Revised Import & Voltage Analysis

September 1, 2004



# Projects

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- (Base case) No major 345 kV project
- (Southwest) Salem – Spring Green – West Middleton – North Madison 345 kV
- (South) Byron – North Monroe – West Middleton – North Madison 345 kV
- Revised Project: (West) Prairie Island – North La Crosse – Columbia 345 kV

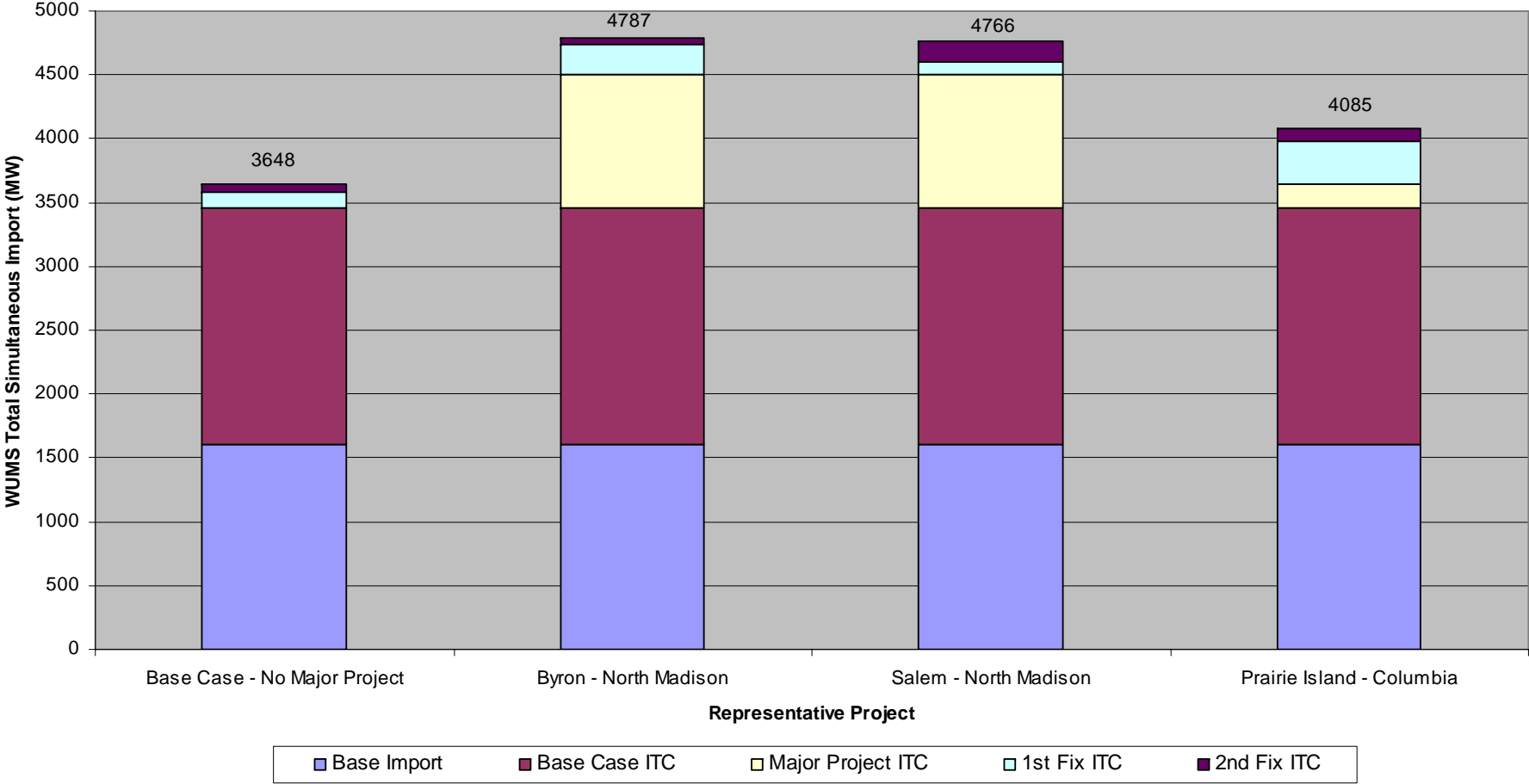


# Case Revisions

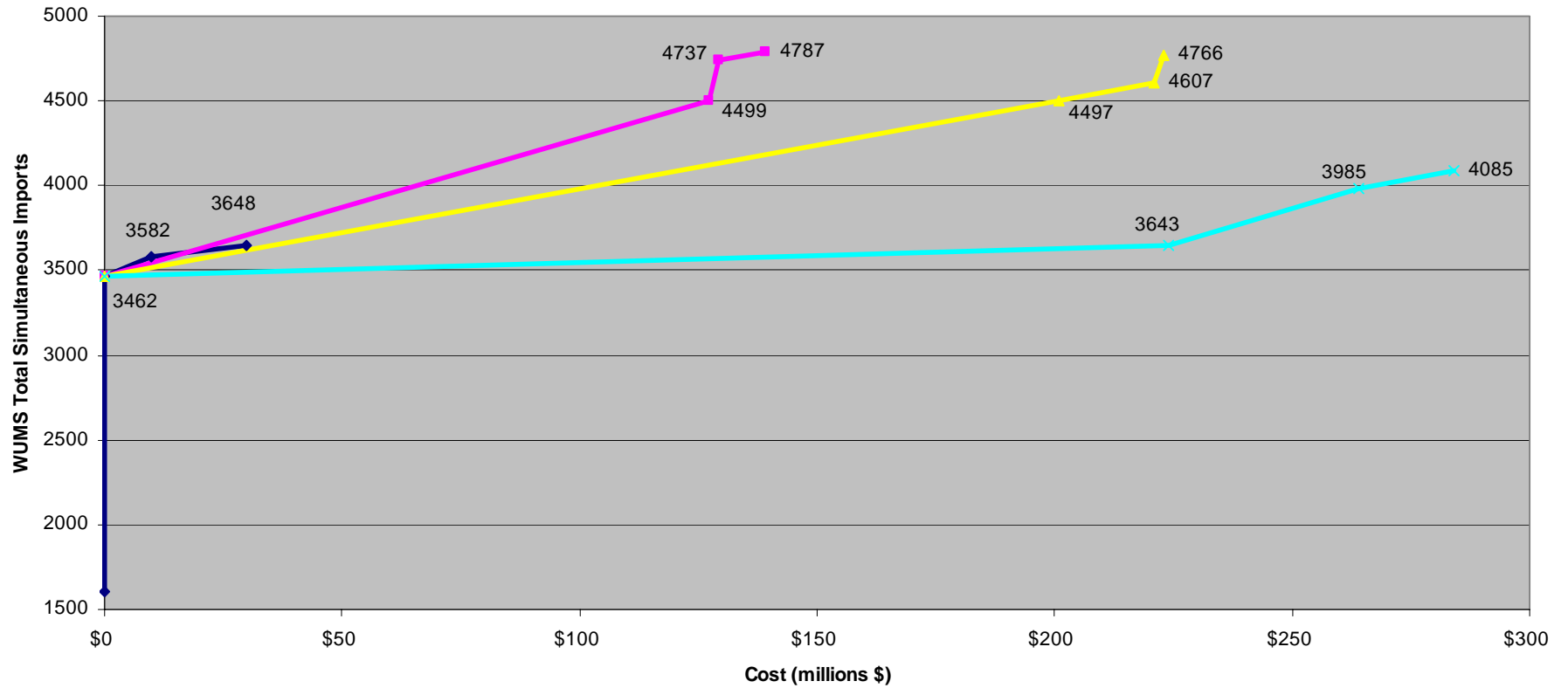
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- Rockdale – West Middleton 345 kV project
- North Madison – Blount 138 kV project
- 2<sup>nd</sup> Oak Creek 345/138 kV transformer
- Upper Peninsula of MI (Zone 2) model updated and corrected
- Arrowhead – Weston 345 kV reactive requirements included
- NSP/DPC North La Crosse 161 kV project

### Comparison of Representative Projects Access Projects



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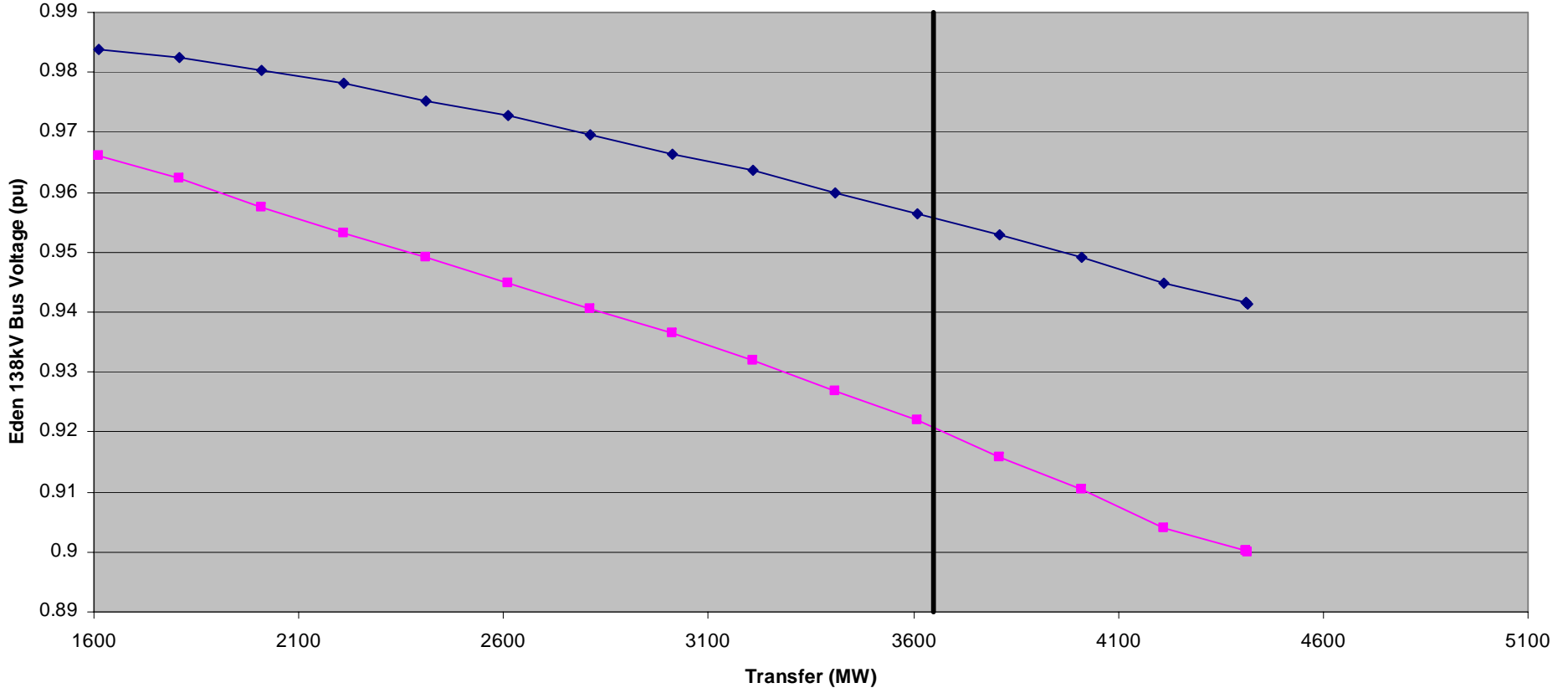


# Voltage Analysis

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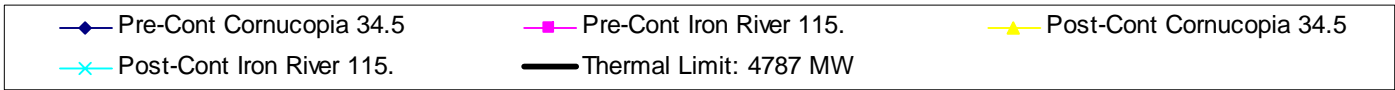
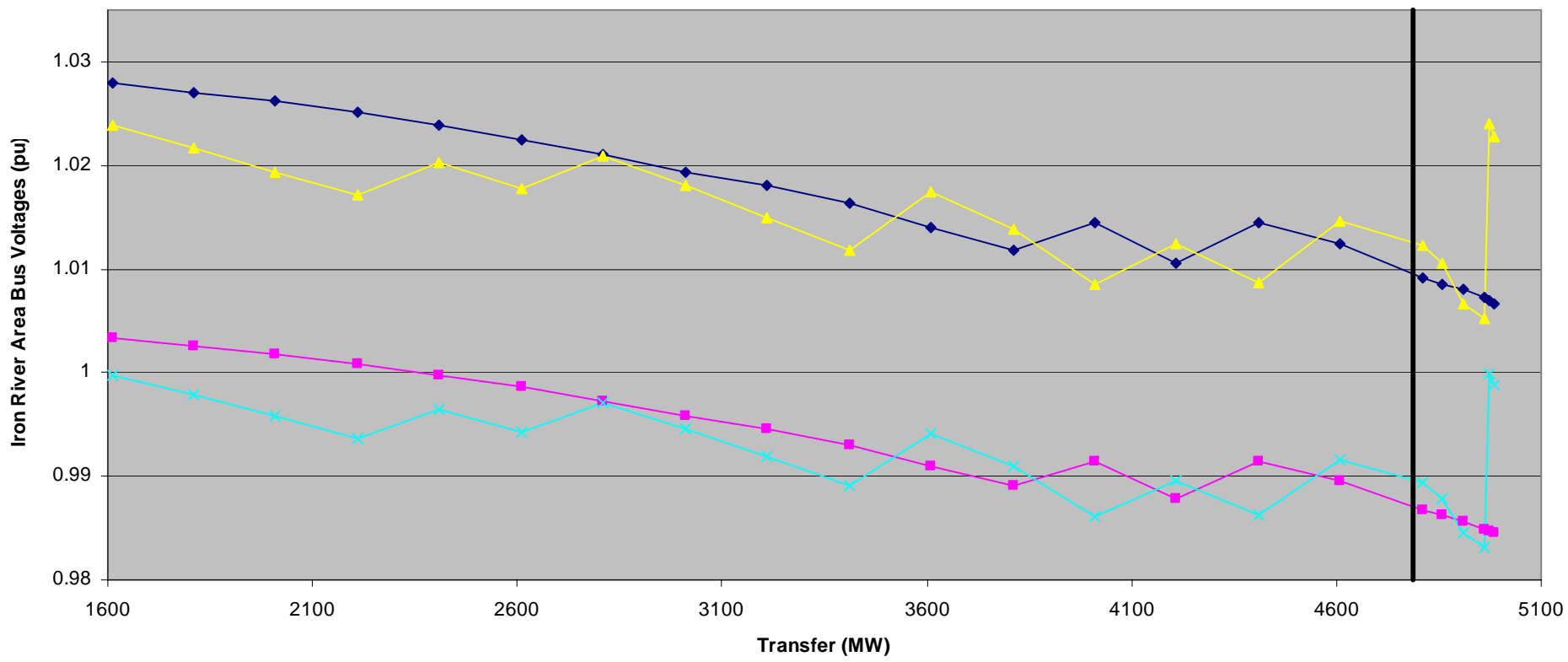
- Powertech Labs VSAT program
  - Calculated maximum transfer into ATC up to the first voltage criteria violation for intact and select N-1 conditions. Criteria used:
    - Voltage collapse – or –
    - Steady state bus voltage below 90% nominal
- Scenarios studied:
  - No major project + first 2 fixes
  - Major project + first 2 fixes

No Major Project + First 2 Fixes  
Contingency: Wempletown-Rockdale 345kV

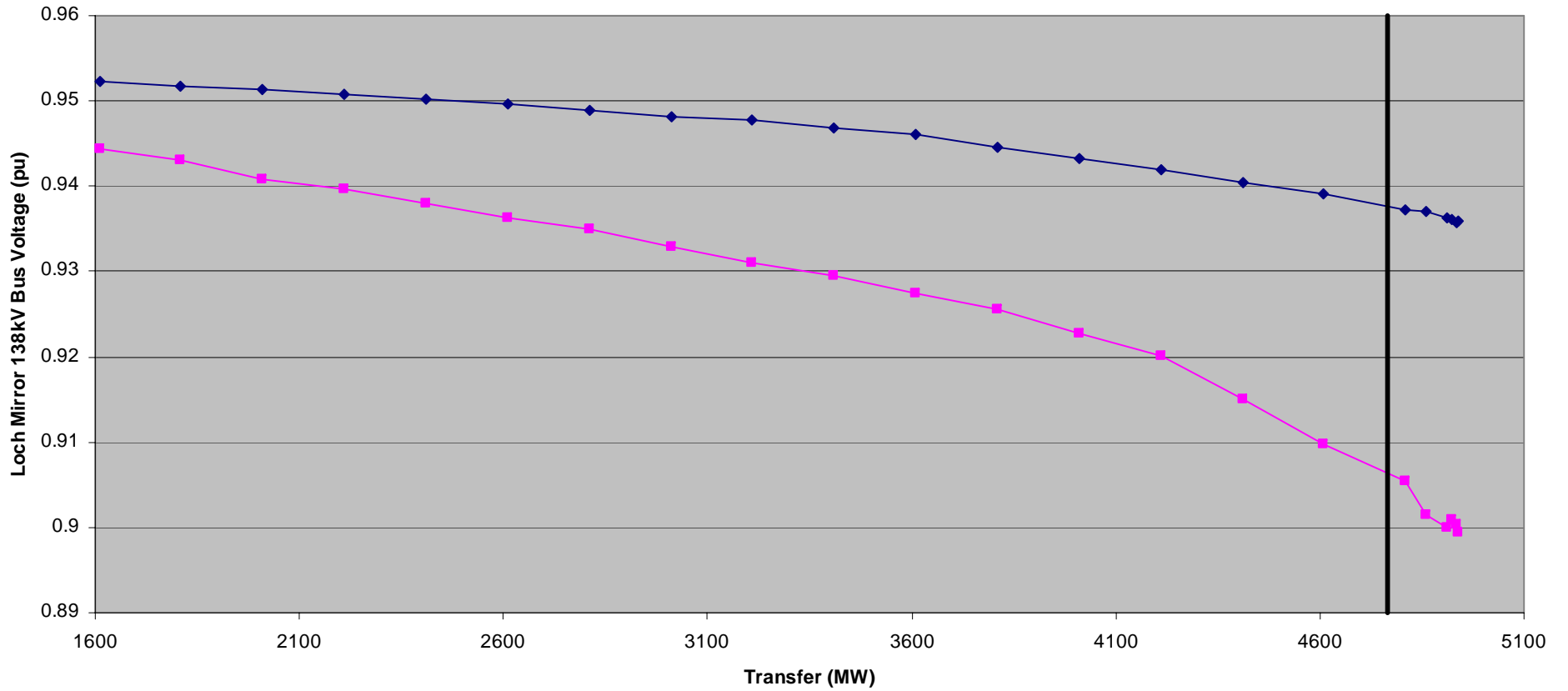


Pre-Cont Eden 138.      Post-Cont Eden 138.      Thermal Limit: 3648 MW

**Byron-N. Monroe-W. Middleton-N. Madison 345kV Project + First 2 Fixes  
Contingency: Eau Claire-Arpin 345kV + Guide**

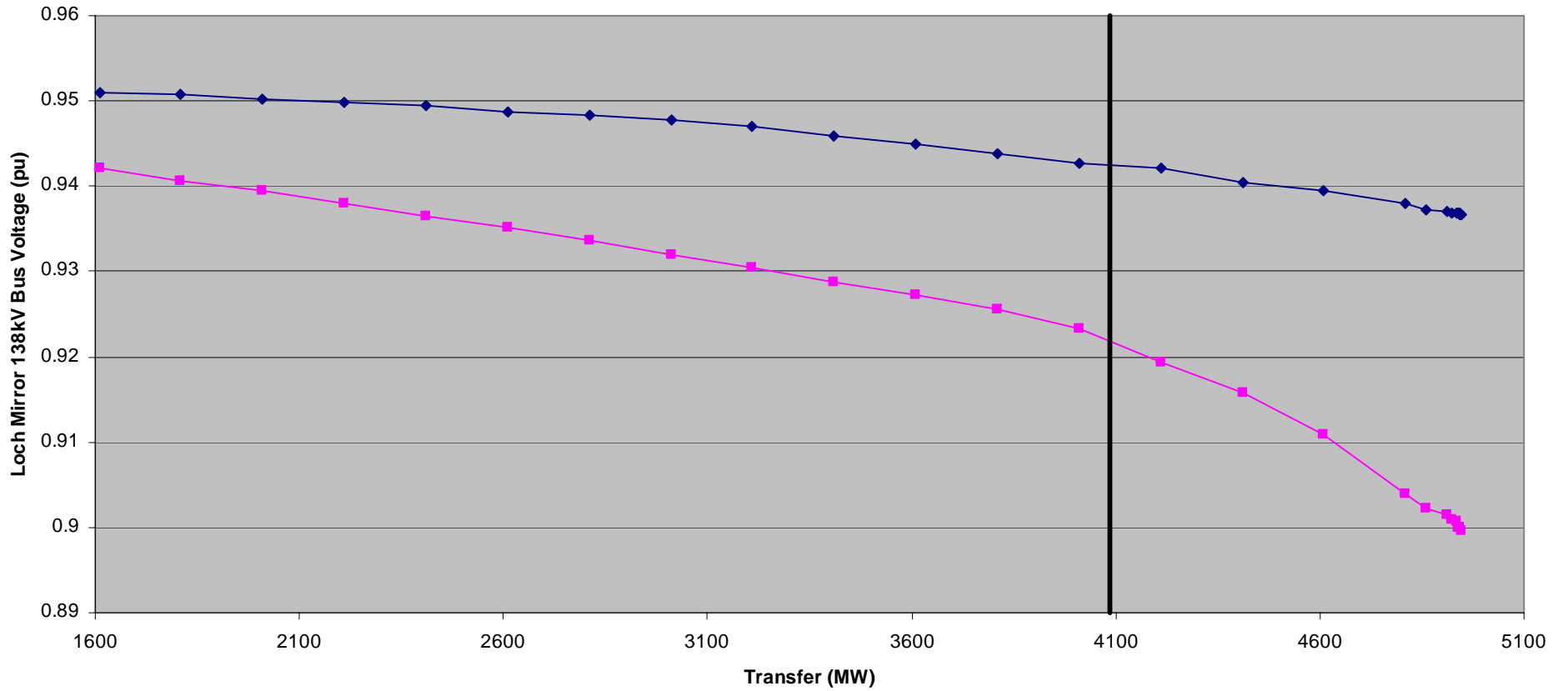


Salem-Spring Green-W. Middleton-N. Madison 345kV Project + First 2 Fixes  
Contingency: Eau Claire-Arpin 345kV + Guide



◆ Pre-Cont Loch Mirror 138.    ■ Post-Cont Loch Mirror 138.    — Thermal Limit: 4766 MW

Prairie Island-N. LaCrosse-Columbia 345kV Project + First 2 Fixes  
Contingency: Eau Claire-Arpin 345kV + Guide



◆ Pre-Cont Loch Mirror 138.    ■ Post-Cont Loch Mirror 138.    — Thermal Limit: 4085 MW



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# Discussion