

ACE Diversity Interchange (ADI)

NYISO Market Structure Working Group
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Origin: Northeast ISO MOU OWG Activities

- **Regional Market Objectives**
 - ✓ *Energy Market*
 - ✓ *Regulation Market*
 - ✓ *Reserve Market*
- Transaction Scheduling
- ICAP Supply Between ISO Markets

Inter-Regional Regulation Vision

- ACE Diversity Interchange
- Common Regulation Requirements
- Establish Wide-Area Control System

ACE Diversity Interchange (ADI)

- **Area Control Error (ACE) diversity among several Areas**
- **Real-time ACE values are netted out, exploiting the diversity in sign of the ACE values.**
- **reduce regulation burden (AGC) in each participating area.**
- **Improve CPS compliance**
- **reduce regulation requirements in the region while retaining each Area's market design.**

ADI Calculations

- Acts as bias to ACE:

$$ACE_{ADI} = (NI_a - NI_s) - 10\beta\Delta f - ADI$$

- Determine amount of ACE to interchange
- Sum ACE of all participants
- Majority and Minority Groups
- All Minority group ACEs are zeroed

Control Area	Initial ACE Value	Initial ADI Allocation	ADI Adjustment	Final ACE value
A	+80	-30	-40	+40
B	+20	-30	-20	0
C	-25	+25	+25	0
D	-25	+25	+25	0
E	-10	+10	+10	0
Net	+40	0	0	+40

ADI Limits

- **Global Limit ~100-150 MW**
- **Each participant may limit ADI in positive or negative direction**
- **Will likely start with 10 – 25 MW and work up to 50 – 100 MW w/ NE.**

ADI Implementation

- **NYISO to act as Central Controller**
- **Initial participants: NY, NE**
- **NY and NE software development complete**
- **Test and Burn-in during February - April**
- **Start real time operation by May 1**
- **Maritimes to join late 2002**
- **PJM and IMO to join later in 2002 or 2003**

NPCC Operating Procedure

- **NYISO to act as Central Controller**
- **The Central Controller shall have the authority to disable ADI exchange if:**
 - ✓ *Control Performance is adversely affected by the ADI*
 - ✓ *ADI contributes to already large accumulations of inadvertent*
 - ✓ *Flows on the transmission system are affected adversely by ADI*

NPCC Operating Procedure

- **Participants may adjust their respective ADI limits, and thus participation, through the Central Controller**
- **Any participant may request that ADI be enabled or disabled globally.**
- **All actions to globally enable or disable ADI will be discussed via Hotline or Conference Call as appropriate.**

Questions