

Southern California Edison Interconnection Process Challenges

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Different Jurisdictional Tariffs

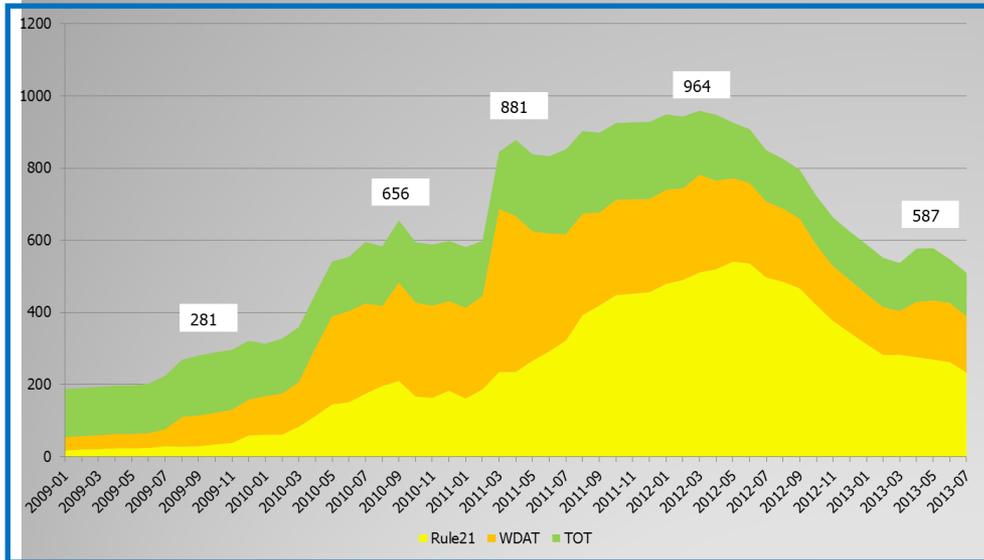
- **Three Interconnection Tariffs in CA**
 - State Of California Interconnection Tariff (CA Rule 21)
 - SCE's FERC Interconnection Tariff (WDAT)
 - TO Tariff (for transmission interconnected projects)

- **Different process requirements (WDAT and Rule -21)**
 - Project under the same tariff can be interconnected on the same system
 - Study timelines are not aligned
 - Study methodology
 - Cluster Study Process on one tariff but not the other
 - Eligibility Limits for Fast Track different
 - Study provision are different(Fast Track, Supplemental Review, etc)

- **Major Revision to SCE's WDAT Approved First Quarter 2011**
 - Provided better alignment with interconnection procedures for large projects (>20MW)
 - Previously had a procedure for large projects (>20MW) and small projects (<20 MW)

- **Major Revision to CA Rule 21 In 2012 (approved third quarter 2012)**
 - Provided a better alignment with SCE's WDAT procedures

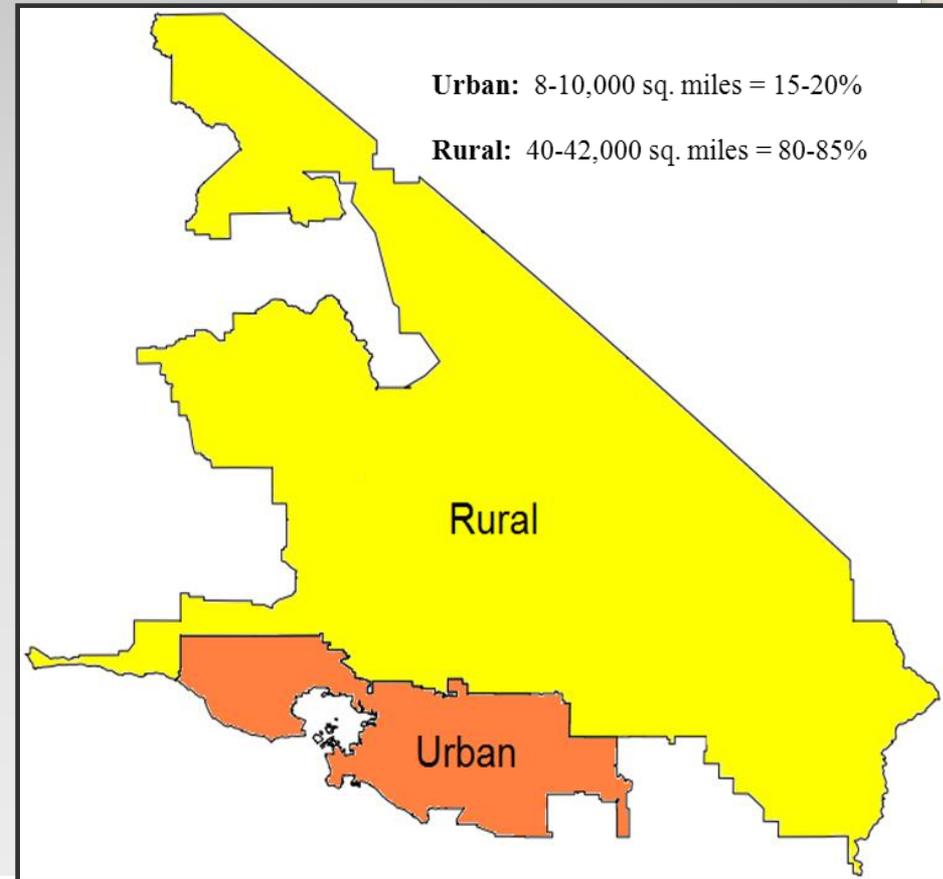
Unprecedented Increase In Interconnection Requests (IR)



- **Transmission IR projected have been steady**
- **Significant increase in IR beginning June 2009**
 - **First wave from WDAT Interconnection requests to the Distribution System**
 - **Increase in CA Rule-21 applications in 2010**
 - **WDAT interconnection peak March 2011 (Cluster #4)**
 - **Rule 21 peak in March 2012.**
 - **Significant withdrawal rate starting on September 2012**
- **Currently new IRs have stabilized (~5/week).**

Location of Interconnection Requests

- Nearly 70% of our applications in the Rural area.
- No load in the rural area
 - Will result in power flow from distribution to transmission systems.
- Power flow from distribution generation project will mix with power flow from transmission projects
 - Who pays for Transmission overload?
 - Tariffs where not properly design to handle these conditions
 - Specially where interconnecting under different tariffs (CA Rule 21 or WDAT)



Increased Penetration Levels To The Distribution Systems

PV Generation Projects ≤ 34.5 kV						
Tariff	Total Number of Projects	Total Generation (MW)	Transmission Area			
WDAT						
			Rural	Size (MW)	Urban	Size (MW)
Complete	46	137	7	58	39	79
IA Executed	29	157	18	142	11	15
No IA Executed	78	385	28	265	50	120
Rule 21 Export						
			Rural	Size (MW)	Urban	Size (MW)
Complete	12	14	8	12	4	3
IA Executed	72	98	62	84	10	14
No IA Executed	107	177	77	130	30	47
NEM						
			Rural	Size (MW)	Urban	Size (MW)
Complete	50708	497	7525	112	43183	385
Pending	5051	56	682	10	4369	46
Pending Projects Totals	5337	873	867	631	4470	242
Complete Projects Totals	50766	648	7540	182	43226	467
*These NEM projects require further research to determine size and distribution circuit						
Complete Projects		Project Count				
Expansions	26 MW	211				
No Circuit	39 MW	3765				
Total	65 MW	3976				

SCE Net Energy Metering Historical and Projections					
Year	kW (Residential)	kW (commercial)	Total/Year	Running Total (MW)	% Increase
2008	9,519	31,555	41,074.0	108.4	61.7%
2009	17,358	19,127	36,485.0	144.9	57.2%
2010	26,929	29,145	56,074.0	200.9	58.1%
2011	43,521	57,899	101,420.0	302.4	60.1%
2012	72,268	73,947	146,215.0	448.6	59.7%
2013	101,310	62,358	163,668.3	612.2	57.7%
2014	98,000	74,800	172,800.0	785.0	56.2%
2015	120,000	89,760	209,760.0	994.8	55.9%
2016	146,880	107,800	254,680.0	1249.5	55.7%
2017	104,000	53,900	157,900.0	1407.4	53.0%

- About 650 MW of DG connected to SCE's distribution system.
- About 310 MW in process of being interconnected
- About 560 MW in the negotiation stage.
- Significant projections of new interconnection and with different technologies (such as storage).

Remaining Activities

Generating Facilities

- **Update to standards (EEE 1547a, IEEE1547.1, CA Rule 21)**
 - **Voltage and Frequency Ride Through**
 - **Active Voltage Regulation**
 - **Output Intermediacy and affects to voltage control**
 - **Communication systems and Utility Interface**
 - **UL Certification (anti-island)**

SCE planning and operational methods for high penetration areas

- **Review Design standards and modify to incorporate high levels of DG**
- **Dependability of variable generation?**
- **SCE direct control of generating facilities?**
- **Integration of new technologies.**
 - **Storage**
 - **Advanced Inverters**

Tariff Updates

- **Revisions to CA Rule 21 currently in process**



**Thank You For The
Opportunity**

“QUESTIONS”

