

QUESTION: Will this change affect substation ratings?

ANSWER: The change to a study-based ratings methodology that was communicated in the March 12 web-conference applies to all overhead conductors in service on ATC's transmission system, including those within substations. ATC is continuously considering the merits and effectiveness of its ratings methodology as applied to other facilities on its transmission system.

QUESTION: Are both normal and emergency ratings changing?

ANSWER: Yes.

QUESTION: Will the new rating methodology be posted on OASIS?

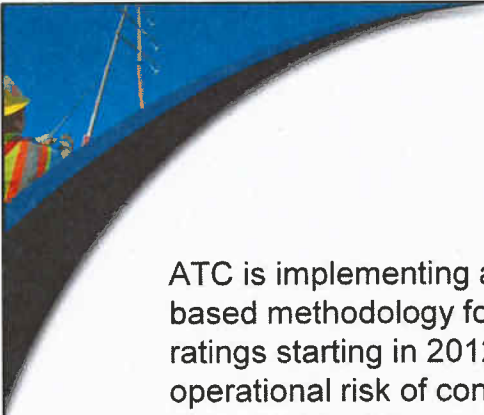
ANSWER: Yes; ATC will make the study-based ratings methodology available at a date that supports implementation within the MISO planning model building process.



Purpose of Presentation


- Describe ATC's new Study-Based Rating Methodology for overhead conductor ratings
- Discuss impact on reliability and congestion
- Discuss mitigation process
- Discuss implementation schedule
- Address stakeholder feedback and concerns



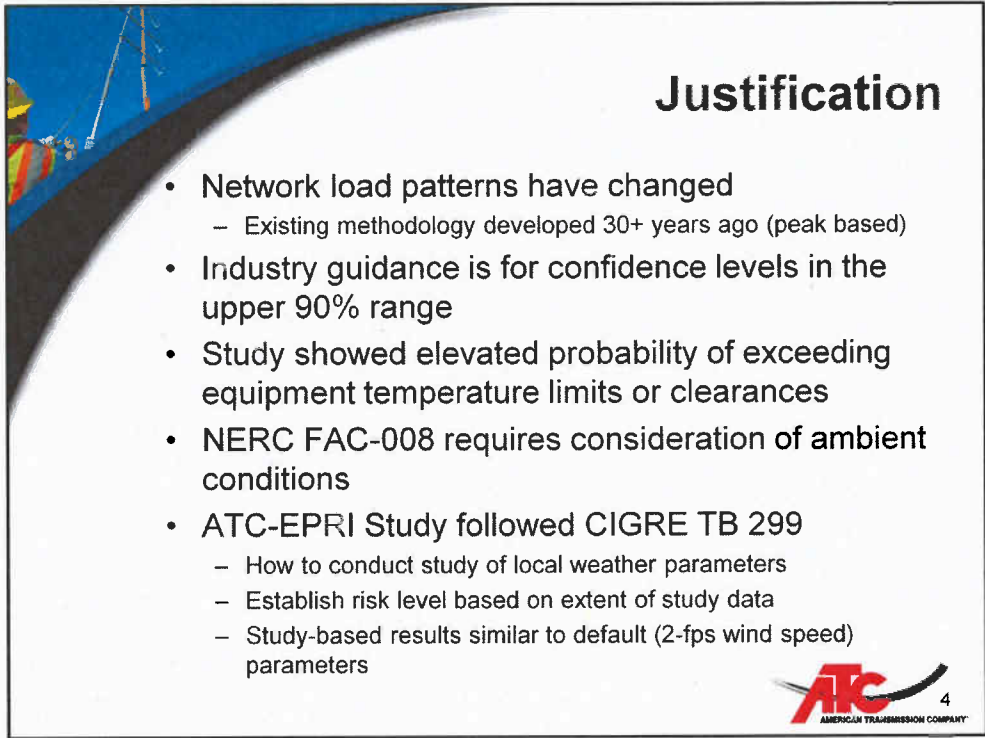


Why Change?

ATC is implementing a newly developed study-based methodology for overhead conductor ratings starting in 2012 to better manage operational risk of conductor damage and clearance problems.




3



Justification

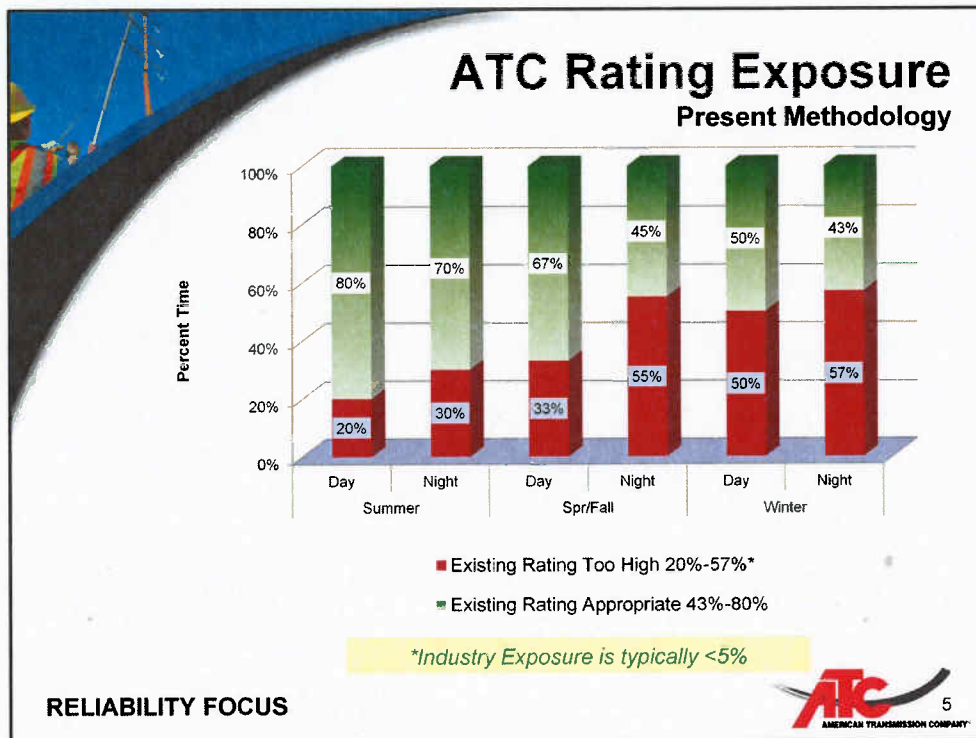
- Network load patterns have changed
 - Existing methodology developed 30+ years ago (peak based)
- Industry guidance is for confidence levels in the upper 90% range
- Study showed elevated probability of exceeding equipment temperature limits or clearances
- NERC FAC-008 requires consideration of ambient conditions
- ATC-EPRI Study followed CIGRE TB 299
 - How to conduct study of local weather parameters
 - Establish risk level based on extent of study data
 - Study-based results similar to default (2-fps wind speed) parameters



QUESTION: Is ATC ahead of the industry in implementing this ratings methodology change? In other words, are other companies going to follow suit?

ANSWER: Other utilities have done weather studies. Since the CIGRE publication was only published recently (2006), early studies may not have followed the CIGRE guidelines.

It is possible that there will be more utilities to follow an approach similar to that of ATC. However, ATC does not have any specific insight in this regard.



QUESTION: Besides Paris-Albers, what were the other two lines evaluated during the study?

ANSWER: Weather data was collected for three sites; Kenosha (as associated with the Paris-Albers line ratings study), Outagamie and Brown Counties in Wisconsin.

QUESTION: How many elements were studied?

ANSWER: This was a rating study of one line and was impetus to initiate a study of ATC's ambient assumptions.

QUESTION: What is the age of the transmission lines studied? What was the percentage difference between actual design and field measured?

ANSWER: The age of the line is not significant as long as the surface condition of the conductor is evaluated as EPRI did for ATC. The as-built, final sag of the conductor was determined from a survey. ATC did not rely on design sag-tension data.

QUESTION: How often were the static ratings less than the real-time ratings?

ANSWER: 43-80% of the time.

QUESTION: Please describe ATC's new rating calculation?

ANSWER: ATC will continue to use IEEE-738 as it always has for calculating ampacity. The way the ratings are calculated did not change. What ATC changed are the input weather parameters as a result of 3+ years of weather studies and statistical analyses. The physical parameters for conductors—resistance, absorption, emissivity—did not change. The maximum operating temperature of a conductor is determined from either clearance or conductor properties and it did not change by virtue of this study, although ATC regularly performs surveys of existing lines to maintain accurate as-built records.

Q&A for slide 5 continued:

QUESTION: Besides wind speed, what other weather parameters were considered?

ANSWER: In its study, ATC monitored not only certain weather parameters like solar, wind speed and direction, and air temperature that are part of the ratings calculation, but also precipitation and conductor sag.

QUESTION: For solar does that mean cloud cover, etc.?

ANSWER: Yes, the solar radiation sensor used does account for cloud cover. It does not account for indirect solar radiation such as reflection off of water or snow for example. ATC also sent samples of the actual conductor to EPRI to determine its absorptivity and emissivity for calibrating weather records to sag measurements.

QUESTION: What logic did ATC use when determining a wind speed assumption to 1.2 ft/s?

ANSWER: ATC's new study-based ratings methodology is based on weather studies we conducted following the guideline outlined in CIGRE TB-299, 2006. It does not employ a single standard wind speed, but rather utilizes statistical consideration of 40+ years of meteorological history of the ATC service territory in determining rating methodology that is data driven and based on published industry guidance. It would be incorrect to consider or compare usage of any single component of a ratings methodology.

QUESTION: Does ATC disagree with IEEE Standard 738-2006 and in particular the following two sections regarding wind speed? 1) Section 3.1.2 that under "conservative" weather assumptions the wind speed would be 2 ft/s to 4 ft/s and 2) Section A.5 "There is considerable evidence from field measurement that still air conditions can exist over limited lengths of time for periods of up to several hours particularly near sunset and sunrise. This is particularly true in areas of heavy foliage where the conductor catenaries are below tree tops. During periods of still air, convective cooling of the conductor is limited to natural convection, which is equivalent to forced convection at a wind speed of 2 ft/s."

ANSWER: No. With regard to industry standards, the scope of IEEE-738 contains the following: "The standard does not recommend suitable weather conditions or conductor parameters for use in line rating calculations." Whereas, CIGRE SC B2's objective for TB-299 was to deliver "a brochure that clearly describes a conservative process whereby weather conditions may be selected for overhead line rating calculations." In this regard, ATC's new methodology utilizes an analytical and statistical approach in its study-based ratings methodology, as described previously.

Q&A for slide 5 continued:

QUESTION: How much lower are ATC's line ratings as a result of this methodology change?

ANSWER: Approximately 17 to 22 percent in summer and 25 percent in winter.

QUESTION: How much of the amp flow on the conductors due to VAR flow?

ANSWER: The reactive power flow contributes to the ampere flow on an overhead conductor according to the complex power triangle as illustrated below. Transmission lines with very low real power flow will see a very high component of their ampere flow due to the reactive power flowing on the line while transmission lines loaded at their surge impedance value will experience very little reactive power flow. When transmission lines are loaded above their surge impedance loading value, reactive power flow will increase and impact the total ampere flow as shown in the complex power triangle. Additionally, reactive power flow impacts the operating voltage of the system and system voltage has an inversely proportional impact on amperes for a given power flow level (i.e. the power equation $S=VI^*$). Due to these complex relationships and the varying levels of real power flowing on the grid each the day, the answer would vary.

QUESTION: Explain more about the study relative to IEEE's "Guidelines for Determining Conductor Temperatures During Measurement of Sag Along Overhead Transmission Lines" whitepaper, dated 2/6/12.


ANSWER: ATC has an established method for determining conductor temperature when performing rating studies. This method is consistent with the considerations advocated within the IEEE whitepaper and has not changed as part of ATC's change to study-based ratings methodology.

QUESTION: Will all ATC lines be re-evaluated under the new rating methodology?

ANSWER: The study-based ratings methodology will be applied to all lines.

Mitigation Process

- ATC will use ‘transitional ratings’ process to mitigate reliability and minimize congestion issues created by the Study-Based Rating Methodology
 - Previously studied impacts
 - Emergent issues
- Facilities impacted by the Study-Based Rating Methodology may continue to be operated at the old rating until upgrades are completed




QUESTION: Will the new ratings be posted when put in use?

ANSWER: The new ratings will go through the MISO model building process and will be available in those models.


QUESTION: Please elaborate on ‘transitional’ ratings and how they will be applied.

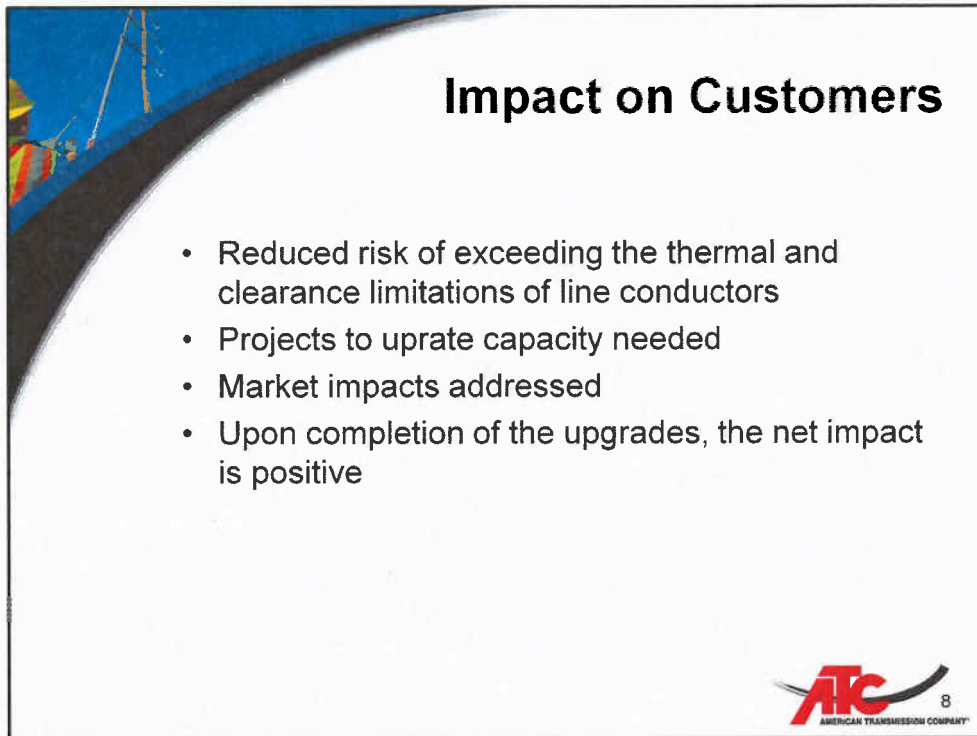
ANSWER: Transitional ratings preserve ratings in place before operational implementation of the study-based ratings methodology and will be used until certain mitigation projects are in-service. The presentation identifies those situations where they will be applied.



Application of Transitional Rating


- Maintains ability to serve load
- Provides ability to address congestion as a result of the Study-Based Rating Methodology
- Manages outage scheduling until the ratings methodology transition is complete
- Minimizes impact on G-T Interconnection projects in MISO Definitive Planning Process before ATC's OASIS posting





Impact on Customers

- Reduced risk of exceeding the thermal and clearance limitations of line conductors
- Projects to uprate capacity needed
- Market impacts addressed
- Upon completion of the upgrades, the net impact is positive



QUESTION: Please elaborate on the statement “90% of circuits are unaffected,” made during the March 12, 2012 web-conference.

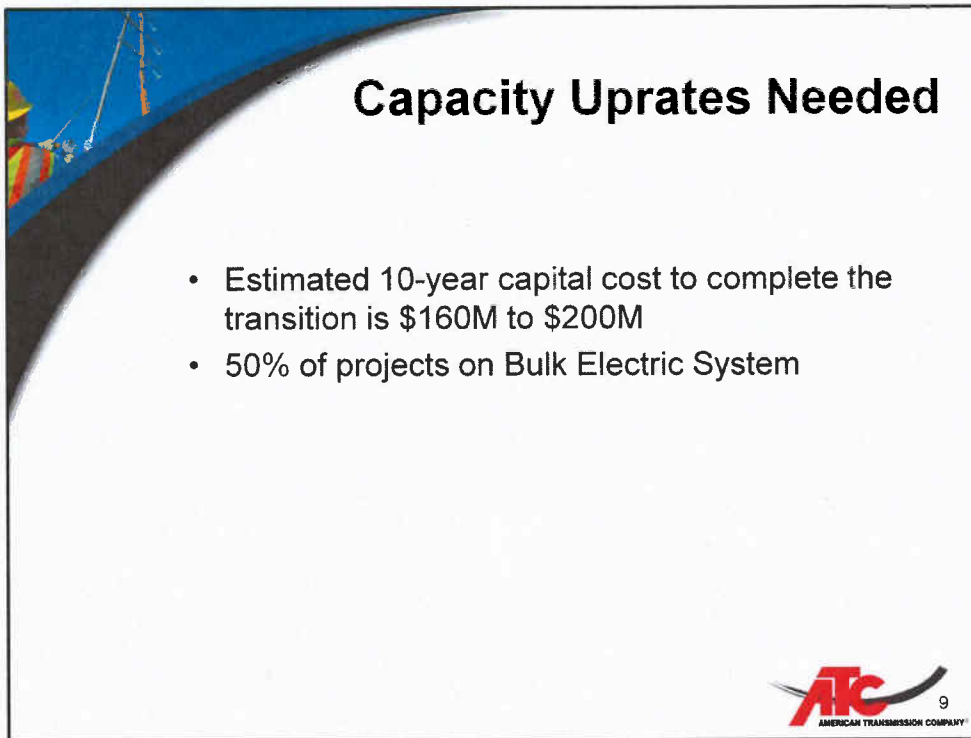
ANSWER: ATC studies have indicated a need to develop and implement transmission upgrades on approximately 10% of ATC’s transmission circuits in order to mitigate reliability, congestion and other impacts directly resultant from ATC’s change to the new study-based ratings methodology.

QUESTION: Will existing approved projects be re-evaluated based on new ratings? Is the value of these projects still valid?

ANSWER: ATC has already completed re-evaluation of several previously-approved projects and continues to do so as part of its 2012 ten-year assessment. The value of none of these projects is changed. If anything, the value of such previously approved projects is only further justified as a result of the change to study-based ratings methodology, especially since the target ratings of existing approved projects are unaffected by ATC’s change to a study-based ratings methodology.


QUESTION: What is the overall impact of the ratings methodology change on any single interconnected entity?

ANSWER: ATC’s new study-based ratings methodology includes provisions for application of transitional ratings to minimize the impacts of implementation of study-based ratings methodology. New ratings resultant from the change to study-based ratings will be available to We Energies and ATC’s other customers for their own study and assessment of impacts on their respective companies via the normal MISO model building process.



Capacity Uprates Needed

- Estimated 10-year capital cost to complete the transition is \$160M to \$200M
- 50% of projects on Bulk Electric System



QUESTION: Are the expenditures cited already in ATC's ten-year assessment asset renewal projection?

ANSWER: ATC's presently-posted ten-year assessment does include a placeholder for projects directly associated with mitigation of issues resultant from implementation of the new study-based ratings methodology.

QUESTION: Where are the other 50% of the investments other than the Bulk Electric System?

ANSWER: On ATC's transmission system operated at 69 kV.

QUESTION: Does ATC need to physically upgrade all elements or are some of the reduced ratings irrelevant because those circuits are never loaded that high?

ANSWER: No, ATC does not need to upgrade all elements. There are less than one hundred line sections that need to be upgraded, representing a small percentage of the total number of line sections that ATC owns. The studies that ATC has performed to date have shown that the majority of lines that ATC owns have extra capacity such that they will not be expected to be a reliability concern or market constraint after the implementation of our study-based ratings methodology.

QUESTION: Is there an amount of upgrades that are clearance vs. conductor and if so, what is it?

ANSWER: A few projects will require new conductors, but most are clearance improvements.

QUESTION: Will ratings be studied in the field before lowered?

ANSWER: No; not at this time any more than the studies ATC has already performed.

QUESTION: Will any lines be loaded beyond acceptable levels once this new methodology is implemented?

ANSWER: No, ATC does not intentionally operate above published ratings.

Q&A for slide 9 continued:

QUESTION: Will any lines need to be rebuilt to larger conductor as a result of implementation of the new study-based ratings methodology?

ANSWER: Yes.

QUESTION: Will any ties to other Transmission Owners' systems be derated?

ANSWER: Yes and ATC will be coordinating directly with those Transmission Owners on any resultant lower ratings.



Market Impacts

- Manage Congestion through...
 - Transitional rating process
 - New projects
- Identify additional congestion and develop mitigation projects to alleviate the congestion
- Address impact on Auction Revenue Rights (ARR) and Financial Transmission Rights (FTR) feasibility in cooperation with MISO



QUESTION: For what year are the ratings based upon the new study-based ratings methodology going to be used for ARR/FTR models and will those ratings be available prior to the opting of the auction for that time frame?


ANSWER: The study-based ratings will be submitted to the MISO Web tool by December 15, 2012 and will be used in the June 2013 ARR Allocation process. The ratings will also be used in the March 2013 Network Model.

QUESTION: How will an entity be able to hedge against the new ratings without a posting?

ANSWER: The study-based ratings will be submitted to the MISO Web tool by December 15, 2012, and will be available for the June 2013 ARR Allocation process. As MISO mentioned in the March 12, 2012 web-conference, the impact on the day-ahead and ARR market should be minimal.

MTEP

- Ratings based upon new study-based ratings methodology will start being used in MTEP13
- Submittals for transitional ratings projects to MTEP via normal process



11

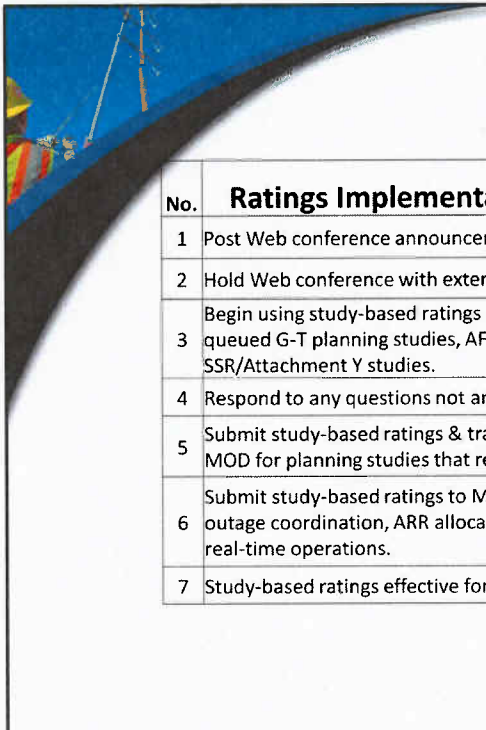
QUESTION: How does ATC see this new methodology impacting the planning process?
ANSWER: ATC and MISO will continue to coordinate in planning. ATC and MISO have prepared an implementation plan that addresses all of the various planning processes, with ATC and MISO already using or starting to use by June 1, 2012 the new study-based ratings in planning models representing the ATC system topology as expected to exist on or after June 1, 2013.




Impact on MISO-Queued G-T Interconnection Projects

- Projects in MISO's Definitive Planning Process (DPP) before ATC's OASIS posting, apply ATC's existing rating methodology
 - Goal: little to no customer cost and schedule impact
 - Parallel studies with existing & Study-Based ratings methodologies (at ATC incremental cost)
 - Transitional ratings for projects that reach Commercial Operation Date before ATC mitigation upgrades are complete
- Projects not in MISO's DPP before ATC's OASIS posting, apply Study-Based Rating Methodology





No.	Ratings Implementation Milestones Timeline	Target Date
1	Post Web conference announcement to MISO OASIS.	2/27/12
2	Hold Web conference with external stakeholders.	3/12/12
3	Begin using study-based ratings in ATC T-D planning studies, new MISO-queued G-T planning studies, AFC, long-term TSRs, and MISO SSR/Attachment Y studies.	3/12/12
4	Respond to any questions not answered in 3/12/12 Web conference.	3/26/12
5	Submit study-based ratings & transitional ratings (as applicable) to MISO MOD for planning studies that represent topology after 6/1/13	6/1/12
6	Submit study-based ratings to MISO Web tool for the following models; outage coordination, ARR allocations, FTR auction, FRAC, day-ahead, and real-time operations.	12/15/12
7	Study-based ratings effective for planning and real-time operations.	6/1/13



QUESTION: When will the new ratings make it to the NERC models?

ANSWER: After the March 12, 2012 conference call, ATC will be using the new study-based ratings in planning models representing its system on or after June 1, 2013. This includes models that ATC builds for internal studies as well as updates submitted to regional organizations including MISO, RFC, MRO and the NERC MMWG. ATC will be including the new study-based ratings in its submittal to the NERC MMWG for the 2012 series models and with the final postings currently scheduled for October 12, 2012.

QUESTION: Will the new rating methodology apply to all ATC lines immediately?

ANSWER: No, both ATC and MISO will not operate to the new ratings until June 1, 2013. ATC and MISO will be using the new study-based ratings in planning models representing the ATC system topology as expected to exist on or after June 1, 2013.

QUESTION: What is the difference between the target dates for real-time operations in items 6 and 7?

ANSWER: ATC will submit to MISO by December 15, 2012 new ratings based upon the new study-based ratings methodology to enable MISO sufficient time to systematically incorporate them into its real-time operations models and systems. However, MISO (like ATC) will not actually operate to these new ratings until June 1, 2013.

QUESTION: How will LBAs access and coordinate with ATC on rating updates?

ANSWER: This information will be available to LBAs through the normal MISO model building process.

QUESTION: When will ATC provide a list of all affected lines with the existing rating, 'transitional' rating, new rating and timing to move from existing ratings to transitional rating to new study-based methodology rating?

ANSWER: This information will be available through the normal MISO model building process.

Questions

