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Roadmap for Expanding in an Ozone Nonattainment/Near Nonattainment Area

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Louisiana Section of A&WMA Annual Conference

Christine Haman and Mark Ezell

Photochemical Modeling

- > Extensive experience, knowledge, time, and cost
- > Extensive amount of computing power compared to other EPA approved models (e.g., AERMOD and CALPUFF) used for PSD purposes

DIFFERENTIAL EQUATIONS REQUIRED FOR A SIMPLE MODEL APPLICATION

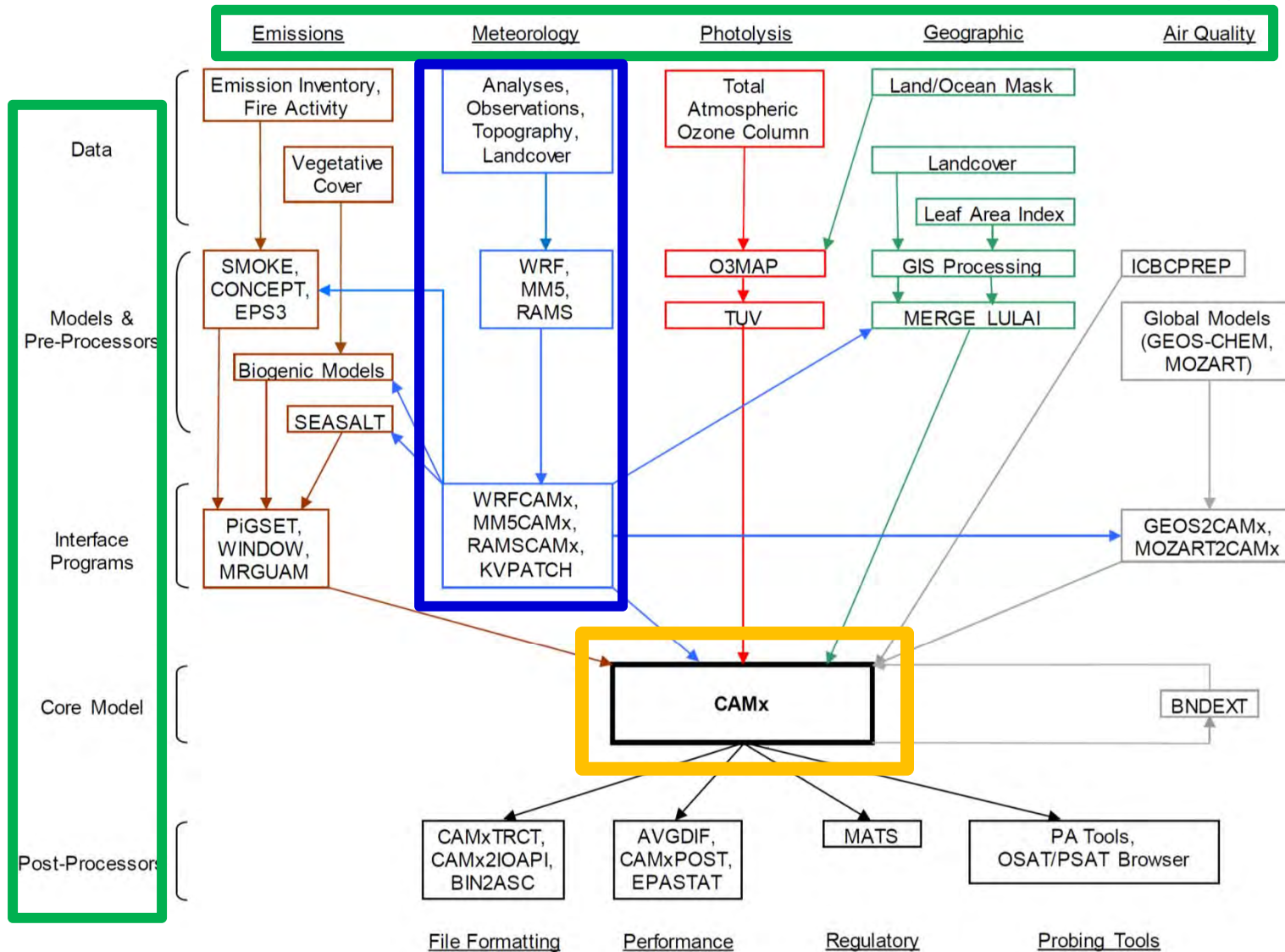
19,750,000
per hour

474,000,000
per day

14,220,000,000
per month

This data intensive model run can only be completed on a Linux cluster with multiple nodes and multiple processors in each node.

Photochemical Modeling



Source: Environ, "CAMx User's Guide Version 6.0," 5/13, pg. 7.

BRNA Redesignation Status

**LDEQ to
EPA June
2015**

**LDEQ to
Resubmit by
end of 2015**



**Comments from
EPA and other
groups**

BRNA Redesignation Status

M.2.a, b, c
40 tpy

M.3
1 to 1 offset

LAC 33:III.504.M

Exemptions: for example, Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements

LDEQ Rulemakings

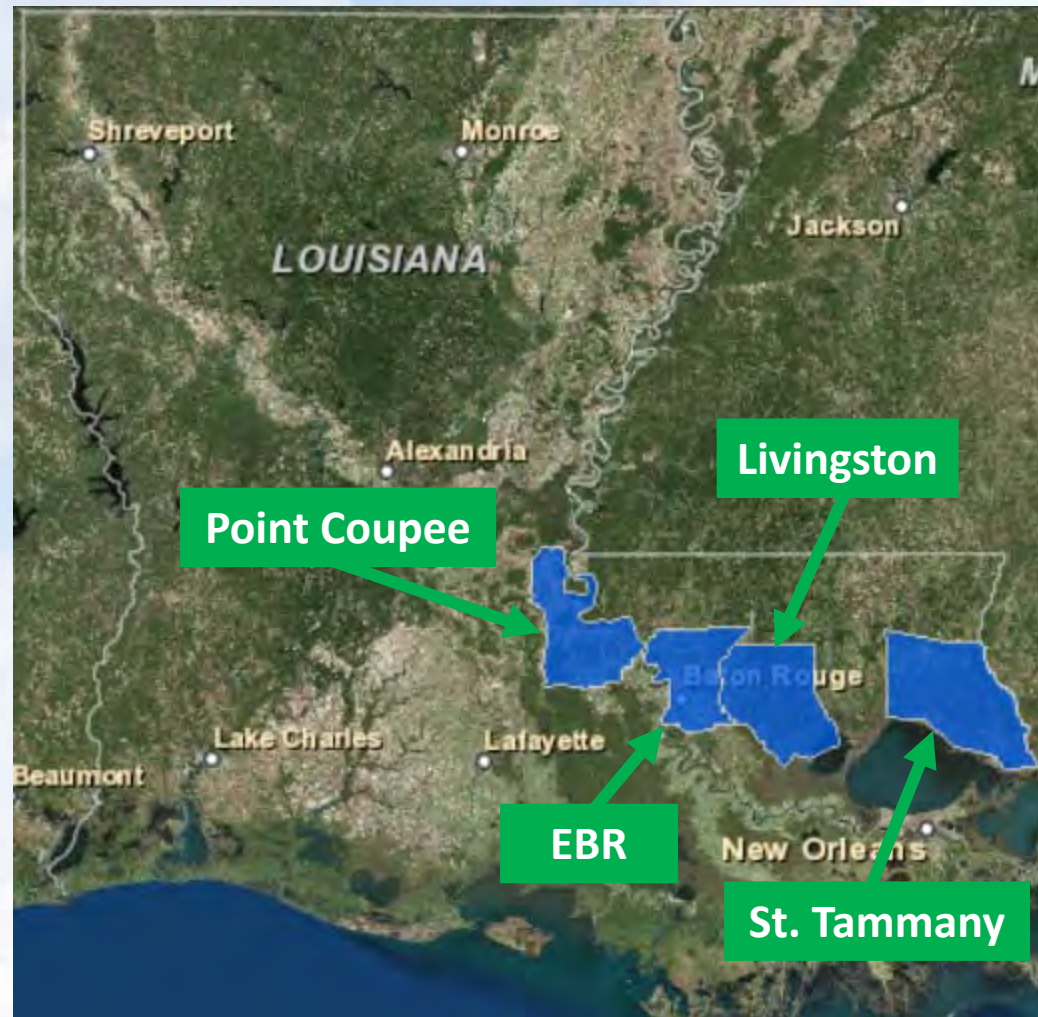
Facilitate future air permitting as a result of the new ozone NAAQS.

ERC Banking
Program Rule
(AQ353)

Emission
Offsets Rule
(AQ354)

New Ozone NAAQS

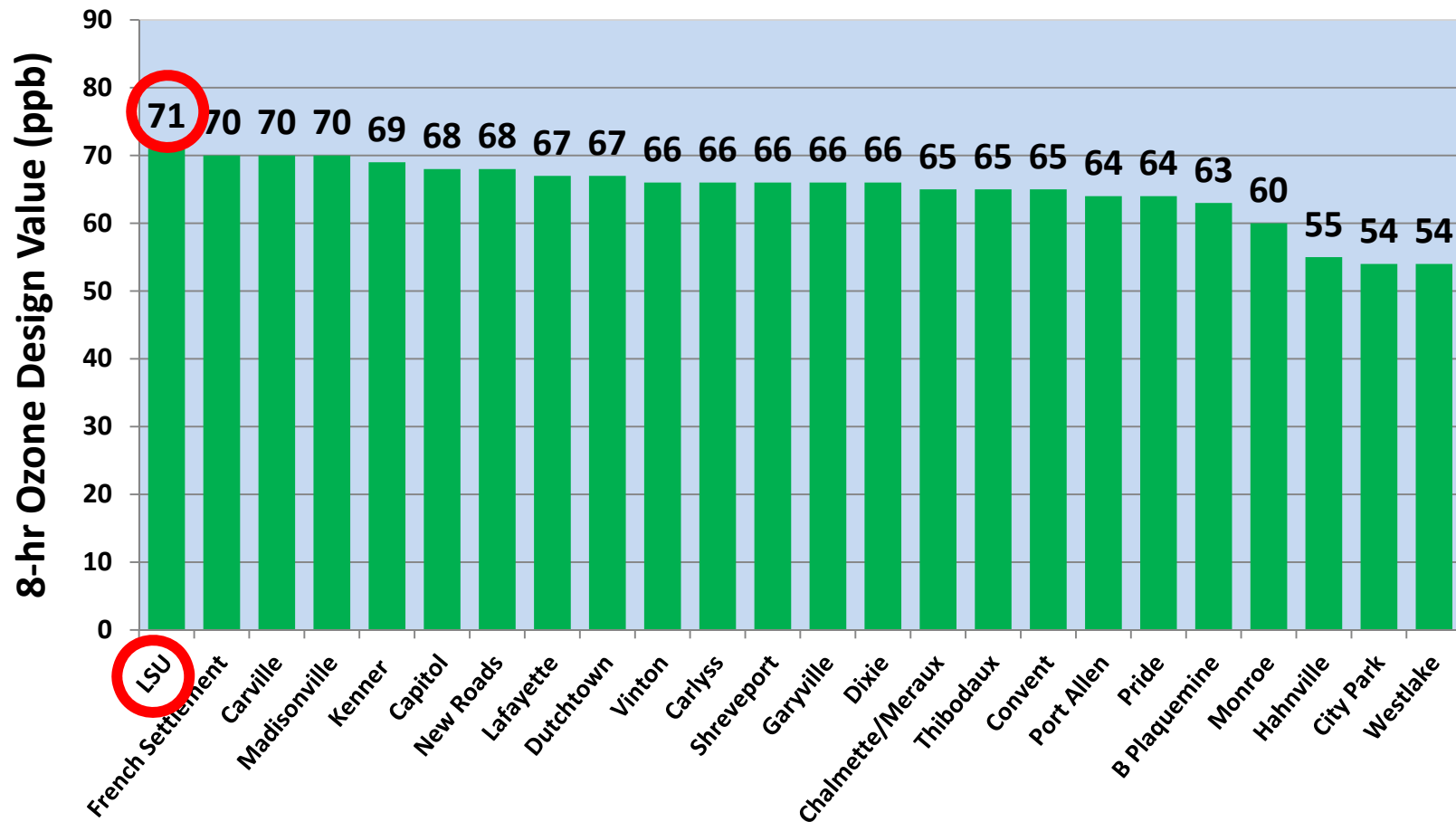
8-hr Ozone 2014
Design Value
(2012-2014 Data)



Source: EPA, http://ozoneairqualitystandards.epa.gov/OAR_OAQPS/OzoneSliderApp/index.html#.

New Ozone NAAQS

8-hr Ozone 2015 Design Value (2013-2015 Data)



Source: LDEQ, 10/21/15.

Current Methods: PSD

VOC

NO_x



Boiler

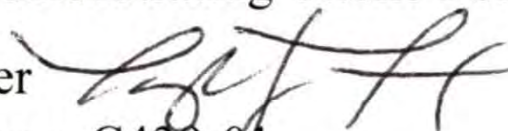
Generator

Flare

Current Methods: PSD

MEMORANDUM

SUBJECT: Proposed Approach for Demonstrating Ozone PSD Compliance

FROM: Tyler J. Fox, Group Leader 
Air Quality Modeling Group, C439-01
Office of Air Quality Planning and Standards

TO: Proposed Regulatory Docket No. EPA-HQ-OAR-2015-0310

“There is currently not a preferred or recommended analytical technique or modeling system to perform ozone compliance demonstration assessments for individual sources.”

Current Methods: PSD

Qualitative/Hybrid

- Low current design value plus previous photochemical modeling

Quantitative

- Photochemical modeling using most recent LDEQ 2013 ozone attainment demonstration modeling files

Proposed Appendix W

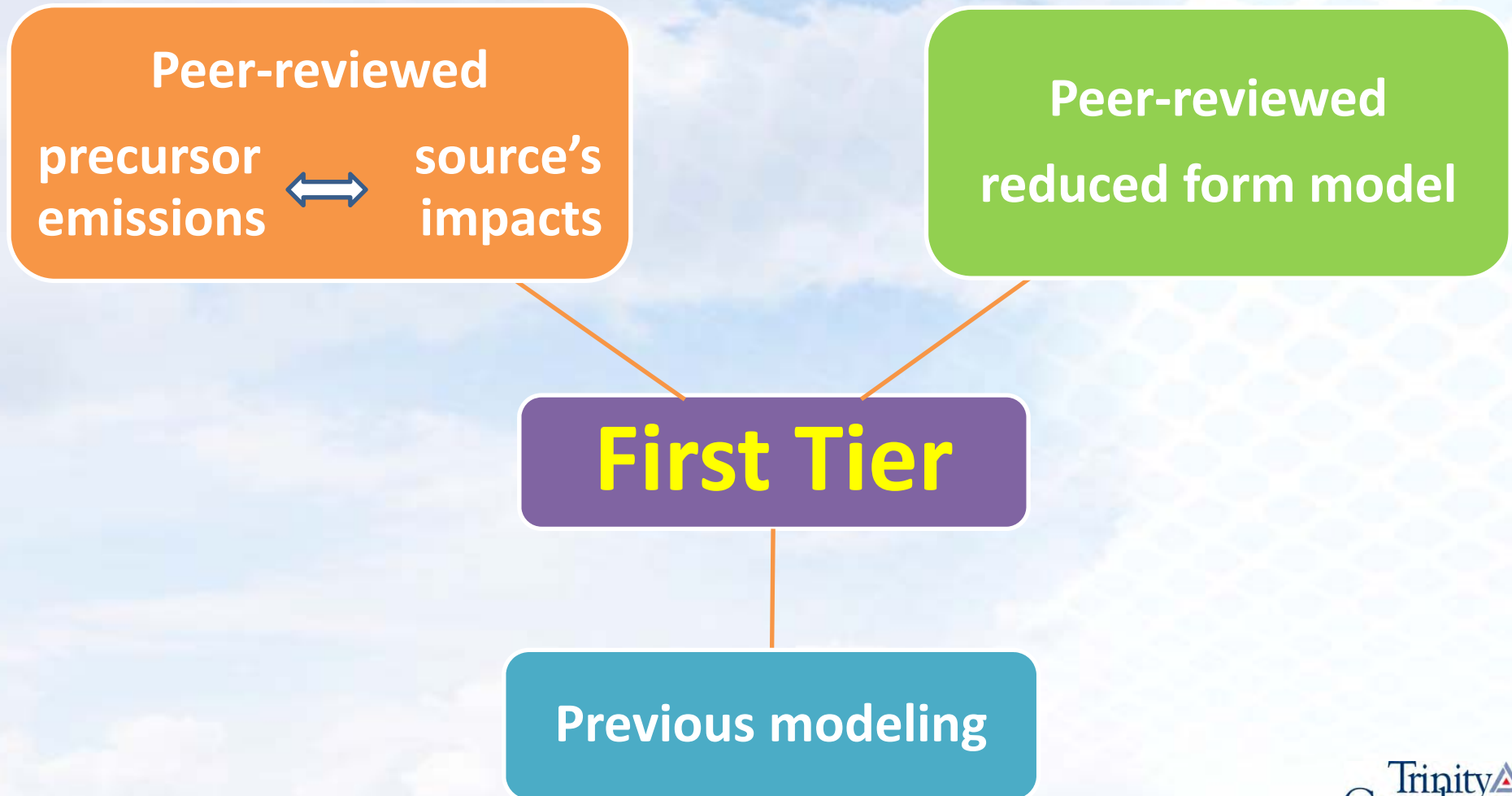
**Texas Plant & EPA
0.3 ppb
1980s**

**EPA Proposed
Update to 40 CFR
51 Appendix W
July 29, 2015**

**EPA Granted Sierra
Club Petition
January 4, 2012**

Proposed Appendix W

Use of technically credible relationships...



Source: EPA, "Proposed Approach for Demonstrating Ozone PSD Compliance" memo by Tyler Fox, 6/30/15.

Proposed Appendix W



Interagency Workgroup on Air Quality Modeling Phase 3 Summary Report: Near-Field Single Source Secondary Impacts

“At this time, it is not clear that a robust reduced form model exists for either O₃ or secondary PM_{2.5} for the purposes of assessing single source downwind impacts of these pollutants.”

Proposed Appendix W

Second Tier

- More sophisticated case-specific photochemical models
- Consult with the EPA Regional Office and conducted consistent with new EPA single-source modeling guidance

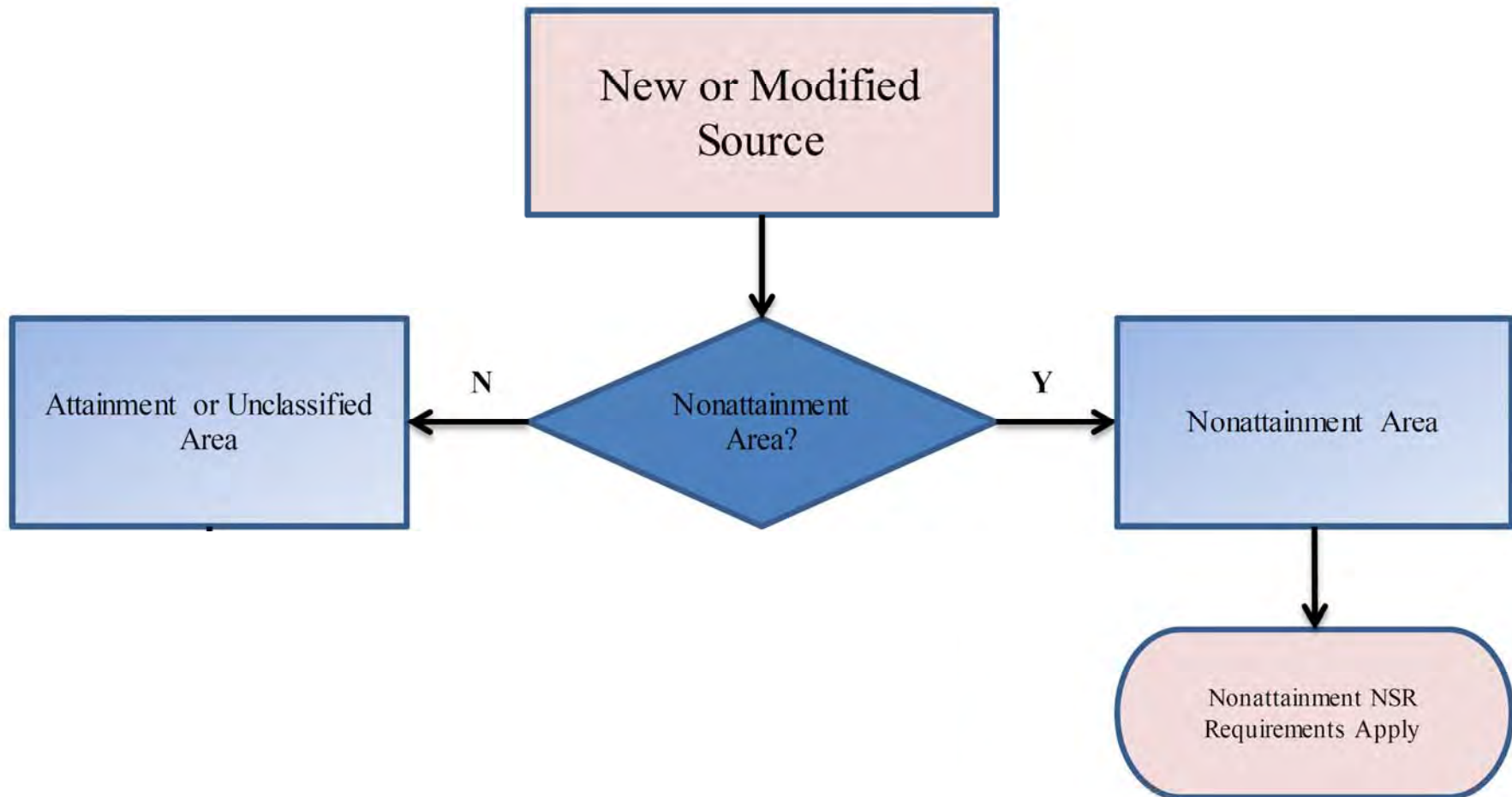
Proposed Appendix W

**Separate EPA
Rulemaking**

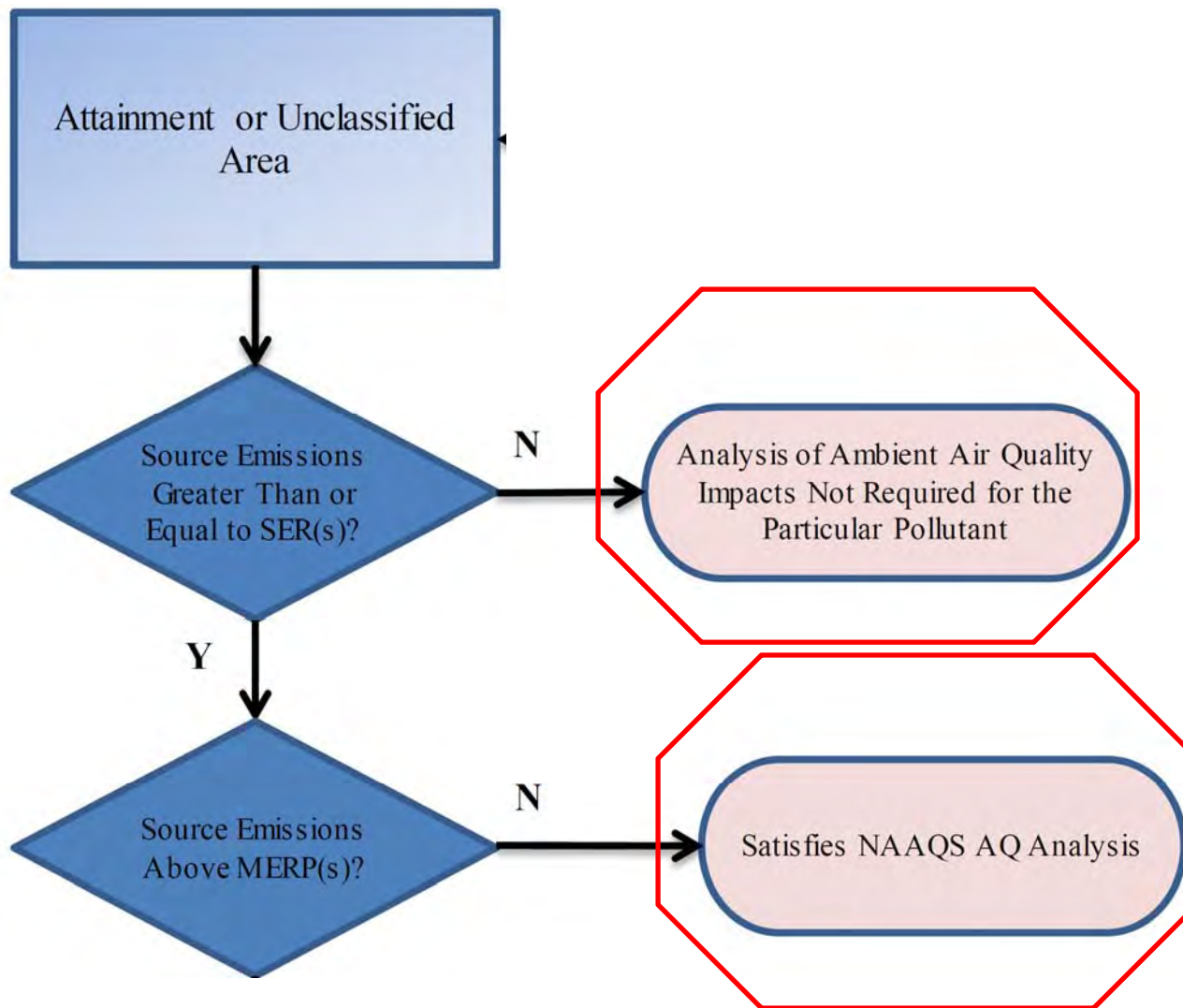
**Demonstration
tool for ozone
precursors
referred to as
MERPs**

Ozone SIL

Proposed Appendix W



Proposed Appendix W



Source: EPA, "Proposed Approach for Demonstrating Ozone PSD Compliance" memo by Tyler Fox, 6/30/15.

Louisiana: Photochemical Modeling Guide

Consult with LDEQ

(PSD purposes and interpollutant trading for NNSR)



Utilize publically available LDEQ CAMx:
base year (2010) and projected future year (2017)



Review current peer-reviewed literature and other
LDEQ/EPA-approved projects

Louisiana: Photochemical Modeling Guide

Current Emission Reduction Credit BRNA Bank (tpy)

NO_x	Ozone NO_x	Non-ozone NO_x	VOC
1,580.54	554.50	1,026.07	236.12

Louisiana: Photochemical Modeling Guide

Emission Offsets Final Rule (AQ354)

LDEQ not actively working on guidance

Utilize Texas guidance document¹

¹ TCEQ, "Guidance on the Inter-Pollutant use of Credits for Nonattainment New Source Review Permit Offset Requirements," 1/14.

Louisiana: Photochemical Modeling Guide



LOUISIANA

- Model the reduction at the location where the reduction actually occurred



TEXAS

- Model the reduction at the location where the increase will occur

Summary

- > Recent policies and guidance have triggered a new wave of modeling needs
- > Photochemical modeling requires extensive knowledge, experience, time, cost, and computing power
- > Utilize LDEQ modeling
- > Proposed PSD guidance still leaves uncertainties (SIL and MERPs)

Summary

“Until any revisions are finalized and in effect, PSD permit applicants should continue to follow the current provisions in the applicable regulations and Appendix W in order to demonstrate that a proposed source or modification does not cause or contribute to a violation of the ozone NAAQS.”

**Thank you for
your attention.**

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