



TCEQ Modeling for the 2008 Ozone Standard

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Southeast Texas Photochemical Modeling Technical Committee Meeting
November 29, 2018



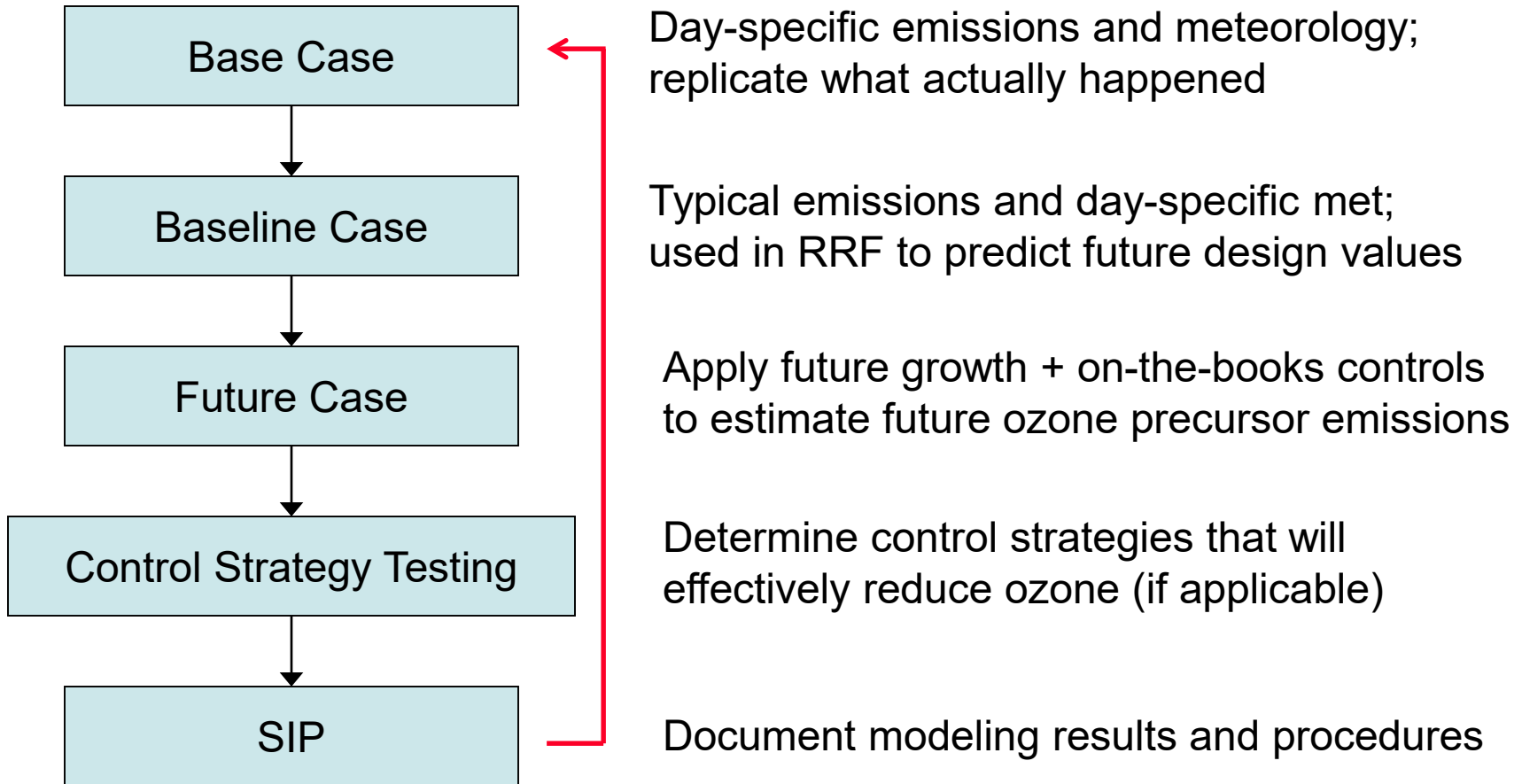
HGB and the 2008 Ozone Standard

- Designated “Marginal” with Attainment Date of July 20, 2015
- Reclassified “Moderate” with Attainment Date of July 20, 2018
- Proposal to reclassify to “Serious” with Attainment Date of July 20, 2021

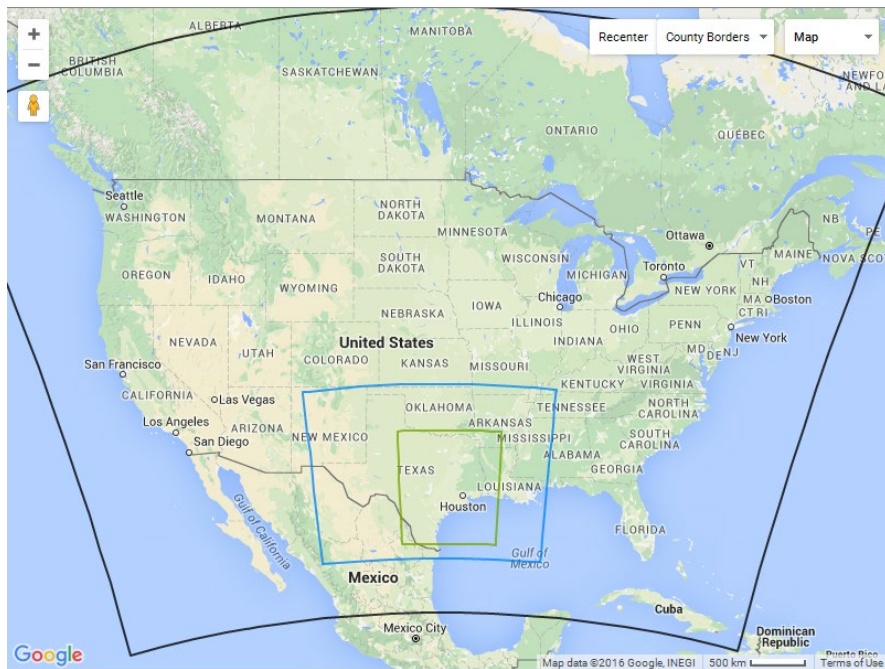
- On 11/14/2018, EPA [proposed](#) that the DFW and HGB areas failed to attain and attainment demonstration SIPs will be due no later than 12 months after the effective date of final reclassification.
 - EPA will accept comments on the proposed SIP due date and other RACT deadlines until 12/14/2018 at <https://www.regulations.gov> under Docket ID No. EPA-HQ-OAR-2018-0226. Follow the online instructions for submitting comments.

Ozone Modeling in SIP Development

One Year Typical Development



Modeling Episode and Configuration

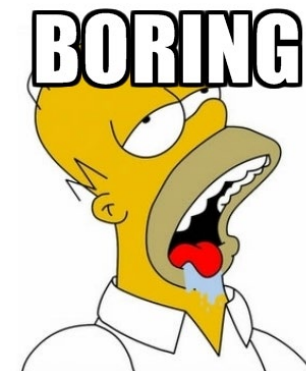


- Episode
 - Base year: May – Sep 2012
 - Future year: 2020

- Domains: 36, 12, 4km

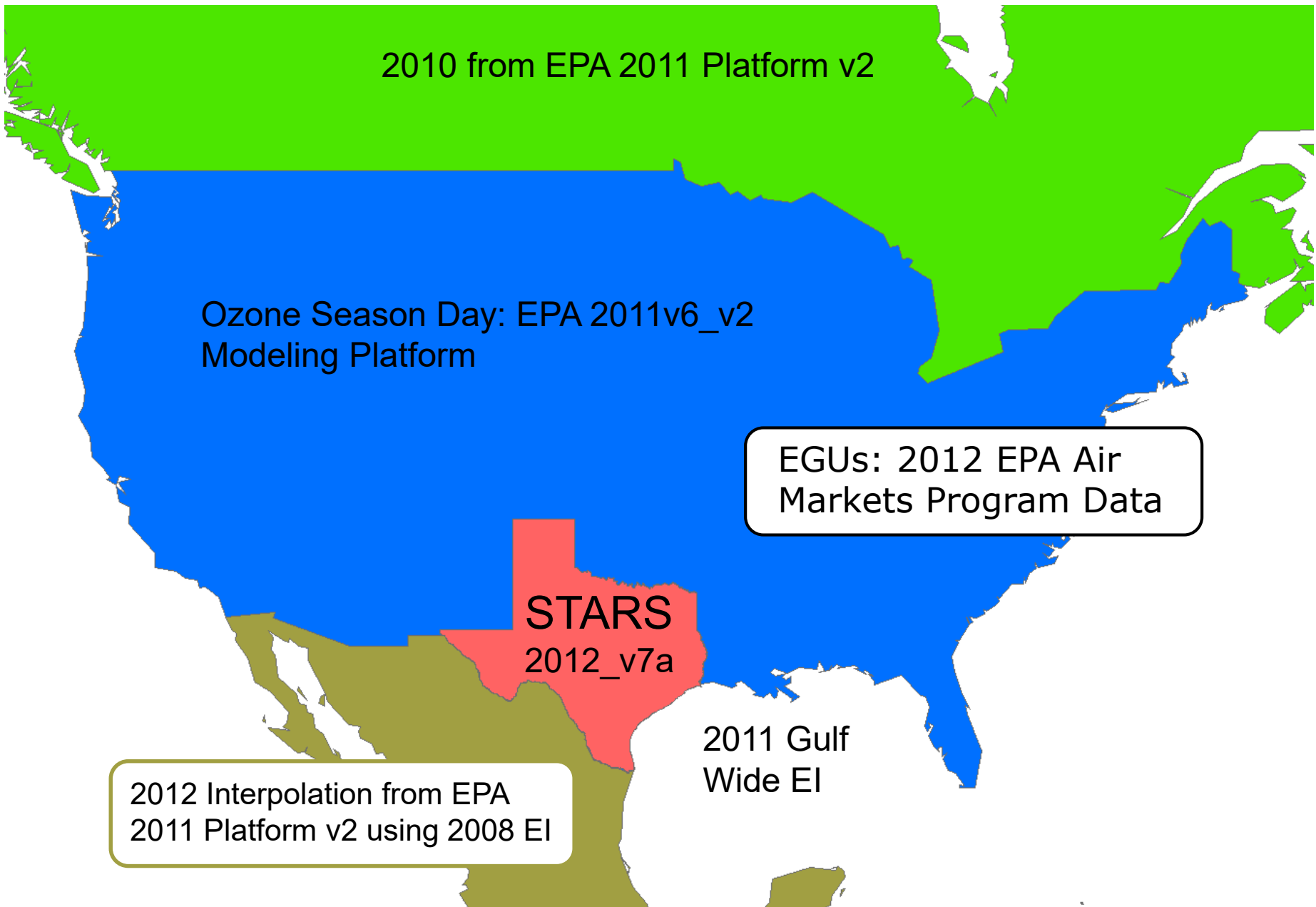
- CAMx 6.5+ with CB6r4
 - Update from 6.31

- WRF 3.7.1
 - No change



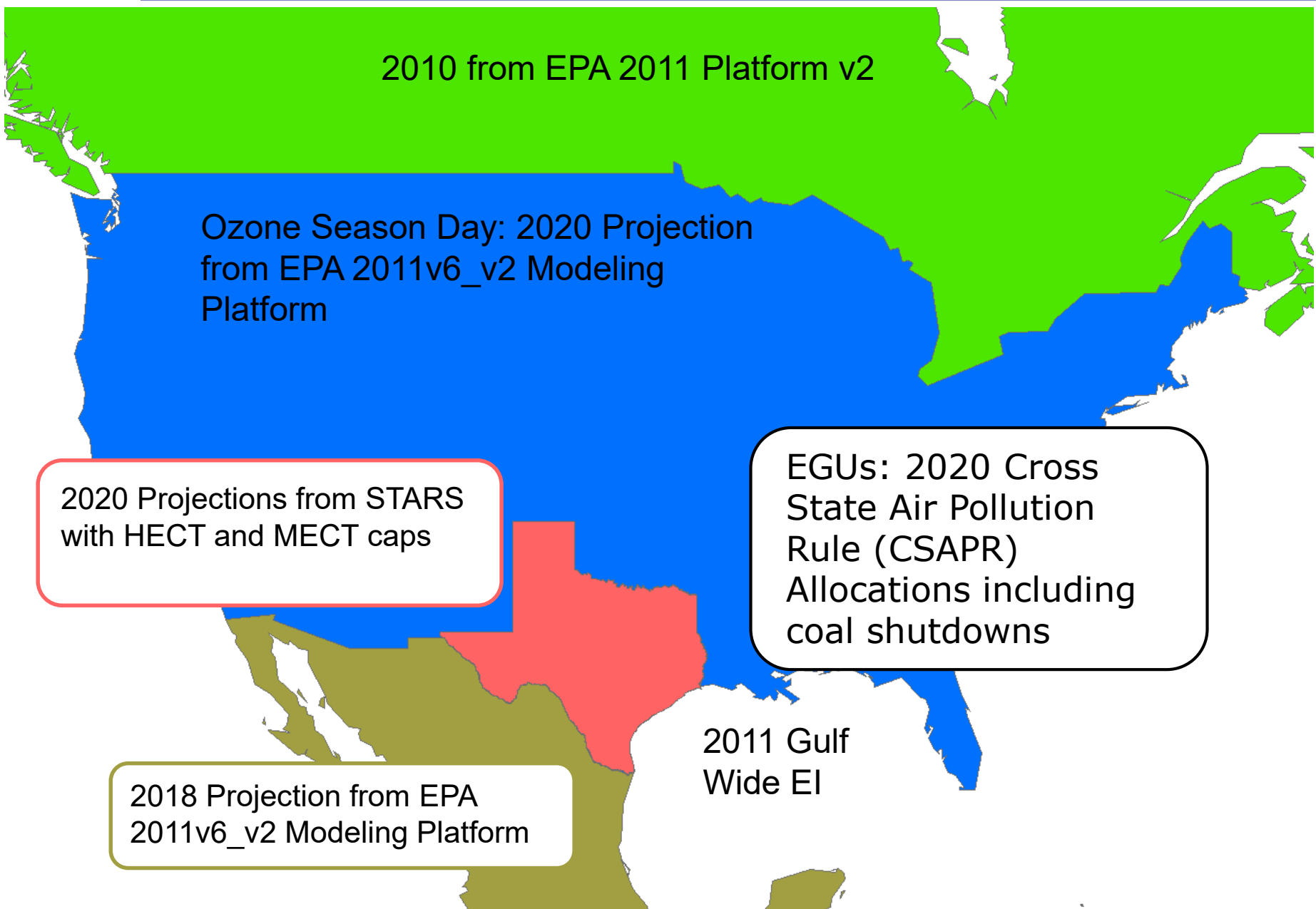


2012 Emission Inventory - Point Sources





2020 Emission Inventory - Point Sources



2010 from EPA 2011 Platform v2

Ozone Season Day: 2020 Projection
from EPA 2011v6_v2 Modeling
Platform

2020 Projections from STARS
with HECT and MECT caps

EGUs: 2020 Cross
State Air Pollution
Rule (CSAPR)
Allocations including
coal shutdowns

2018 Projection from EPA
2011v6_v2 Modeling Platform

2011 Gulf
Wide EI



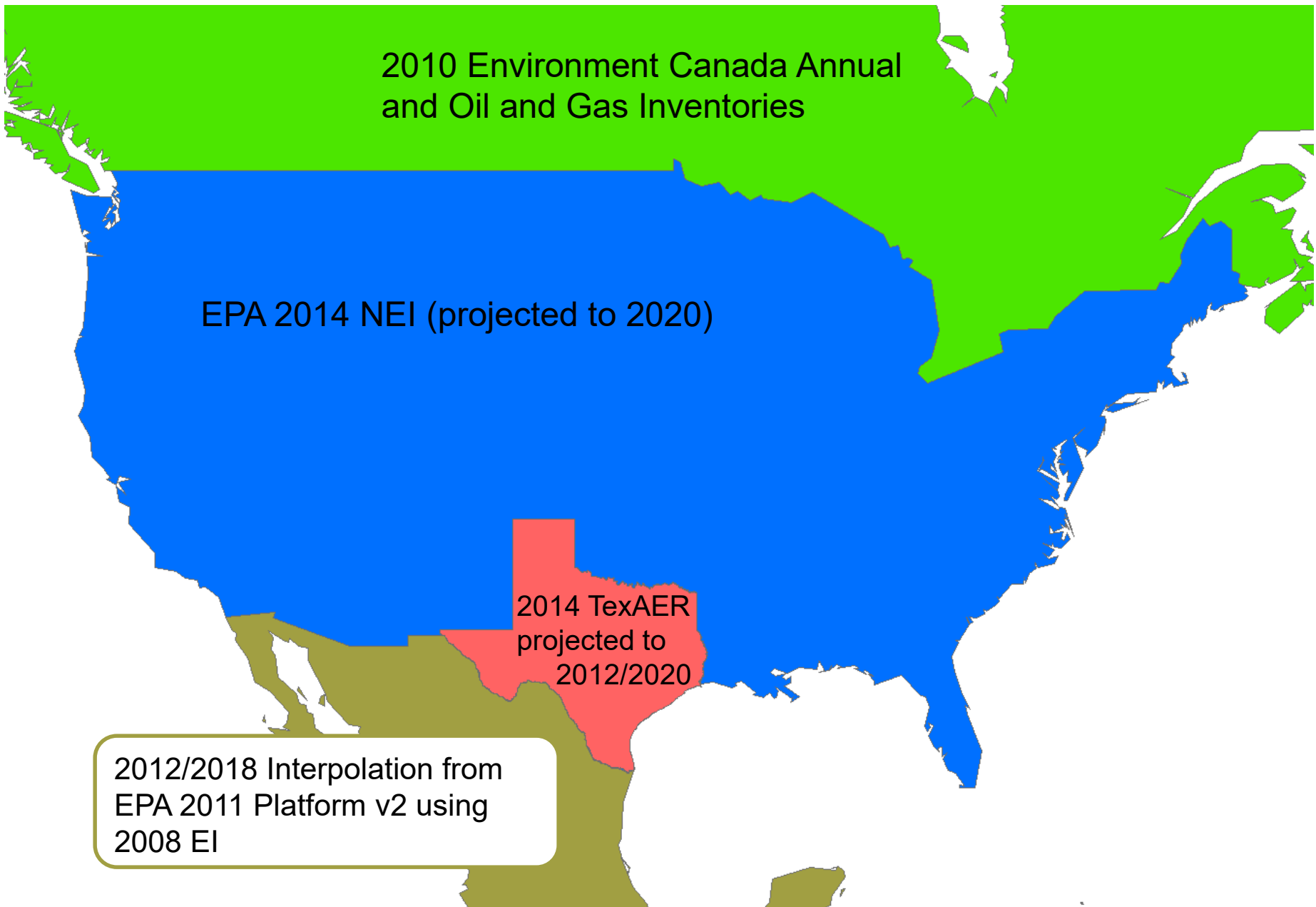
2012 & 2020 Emission Inventory - Area Sources

2010 Environment Canada Annual
and Oil and Gas Inventories

EPA 2014 NEI (projected to 2020)

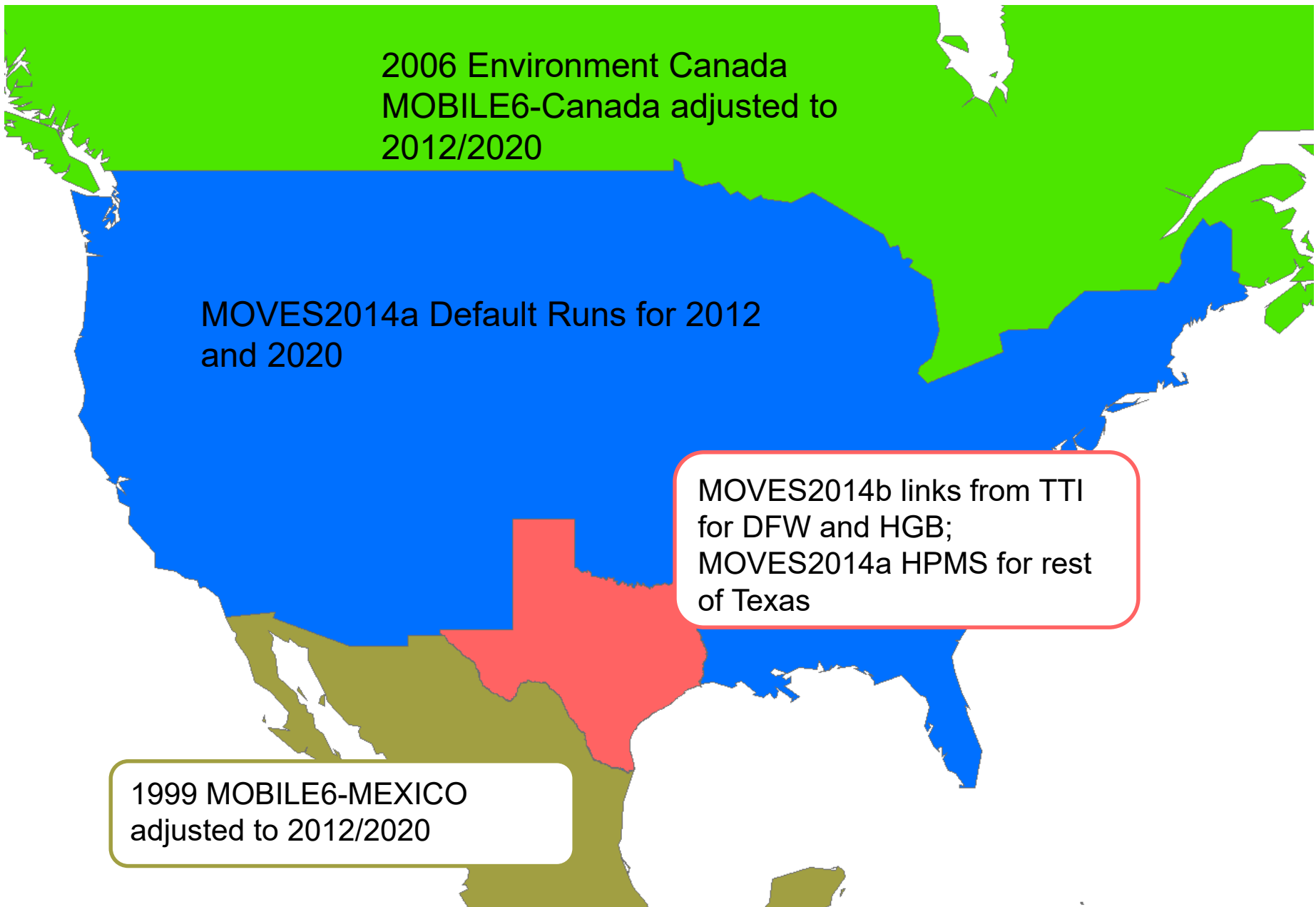
2014 TexAER
projected to
2012/2020

2012/2018 Interpolation from
EPA 2011 Platform v2 using
2008 EI





2012 & 2020 Emission Inventory On-Road Sources



2006 Environment Canada
MOBILE6-Canada adjusted to
2012/2020

MOVES2014a Default Runs for 2012
and 2020

MOVES2014b links from TTI
for DFW and HGB;
MOVES2014a HPMS for rest
of Texas

1999 MOBILE6-MEXICO
adjusted to 2012/2020



Emission Inventory – Expected Updates

- Updated 2020 Point Sources for cap-and-trade program allocations and base-year projections
- MEGAN3 or BEIS biogenic emission model choice
- 2018 Oil and Gas update (latest Railroad Commission of Texas data)
- 2012 DFW and 2020 DFW and HGB link-based On-road Mobile (Texas Transportation Institute)
- Updated Fire EI (2018 AQRP project results)



SIP Emissions Year for Credit Generation Projects

DFW Emissions Sources	Current SIP Emissions Year	New SIP Emissions Year
Electric generating units (EGU) with emissions recorded in the Environmental Protection Agency's Air Markets Program Data for the SIP emissions year	2014	2018
All other point sources	2012	2016

HGB Emissions Sources	Current SIP Emissions Year	New SIP Emissions Year
EGUs with emissions recorded in the Environmental Protection Agency's Air Markets Program Data for the SIP emissions year	2015	2018
All other point sources	2014	2016

For more Emissions Banking and Trading info:

<https://www.tceq.texas.gov/airquality/banking>



Meteorological Modeling

Current

- WRF 3.7.1 w/ 45 vertical layers (+1 at the surface)
- Multi-Scale Kain-Fritsch cumulus parameterization
- Pleim-Xiu Land Surface Model (soil moisture initialized from analysis)
- YSU Planetary Boundary Layer scheme
- WSM5/WSM6 microphysics
- 3D-analysis nudging (all domains)
- Hourly 3D, surface analysis and profiler observational nudging (4km domain)



Photochemical Model

Current

- CAMx 6.50 with 29 vertical layers (+1 at the top)
 - new NetCDF file format
- CB6r4h with updated condensed halogen chemistry
- Sea salt emissions
- GEOS-Chem v2.2 Boundary Conditions
- Wesely dry deposition (replaced Zhang)

Anticipated

- Source Apportionment (APCA)
- Direct-Decoupled Method



What About A New Episode?

- A new multi-purpose emissions modeling platform (EMP) based on the 2014 National Emissions Inventory version 2 (2014NEIv2) is needed
 - State Implementation Plans, federal analyses
 - For the first time, EPA, states, and MJOs are engaging in collaborative EMP development
 - The 2016 base year was selected via a **collaborative process**
- Future years selected due to regulatory relevance
 - 2023 is relevant for Ozone NAAQS moderate areas
 - Although 2020 is relevant for 2015 O3 NAAQS marginal areas, modeling is not required for marginal areas; **2020 is relevant for 2008 O3 NAAQS reclassifications**
 - 2028 for regional haze



2016 Collaborative Modeling Workgroups

- EGUs
- Non-EGU Point
- Nonpoint
- Oil and gas sources (point and nonpoint)
- Onroad
- Nonroad
- Rail
- Commercial Marine Vessels (CMV)
- Fires
- Biogenics
- Modeling



2016 Collaborative Modeling Platform Schedule

- Several versions of 2016 platform will be developed
 - **Alpha:** *preliminary* version based on 2014NEIv2 for some and 2016 for other key sectors (released May 2018)
 - <ftp://newftp.epa.gov/Air/emismod/2016/alpha/>
 - Compatible versions of 2014 and 2015 were also released
 - For initial testing of 2016 model runs
 - **Beta:** *improved and/or new* version of actual 2016 emissions for most sectors and preliminary projected emissions to 2023 and 2028 (~December 2018)
 - **V1.0:** *fully updated* 2016 emissions and complete projected emissions for 2023 and 2028 (Early 2019)
- Schedule overlaps with 2017 NEI development
 - **Prioritize the 2017 NEI over the 2016 platform**, as needed
 - Any missing data for 2016 will be filled in based on 2014 NEI data and nationally consistent methods



Modeling Web Sites

- SET PMTC: Presentations and past meeting information
http://www.tceq.state.tx.us/airquality/airmod/committee/pmtc_set.html
- Current Eight-Hour Ozone SIP Modeling Details
<https://www.tceq.texas.gov/airquality/airmod/data>
- Interactive Modeling Map Results
<https://www.tceq.texas.gov/airquality/airmod/data/results?year=2012>
- Interactive Modeling Time Series
<https://www.tceq.texas.gov/airquality/airmod/data/ts?eps=20120501-20120531>
- Current Modeling File FTP Site
<ftp://amdaftp.tceq.texas.gov/pub/TX/>
- HGB: Latest Ozone Planning Activities
<http://www.tceq.texas.gov/airquality/sip/hgb/hgb-latest-ozone>



Questions?

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The Air Modeling & Data Analysis Section
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