Proposed New Modeling Domains

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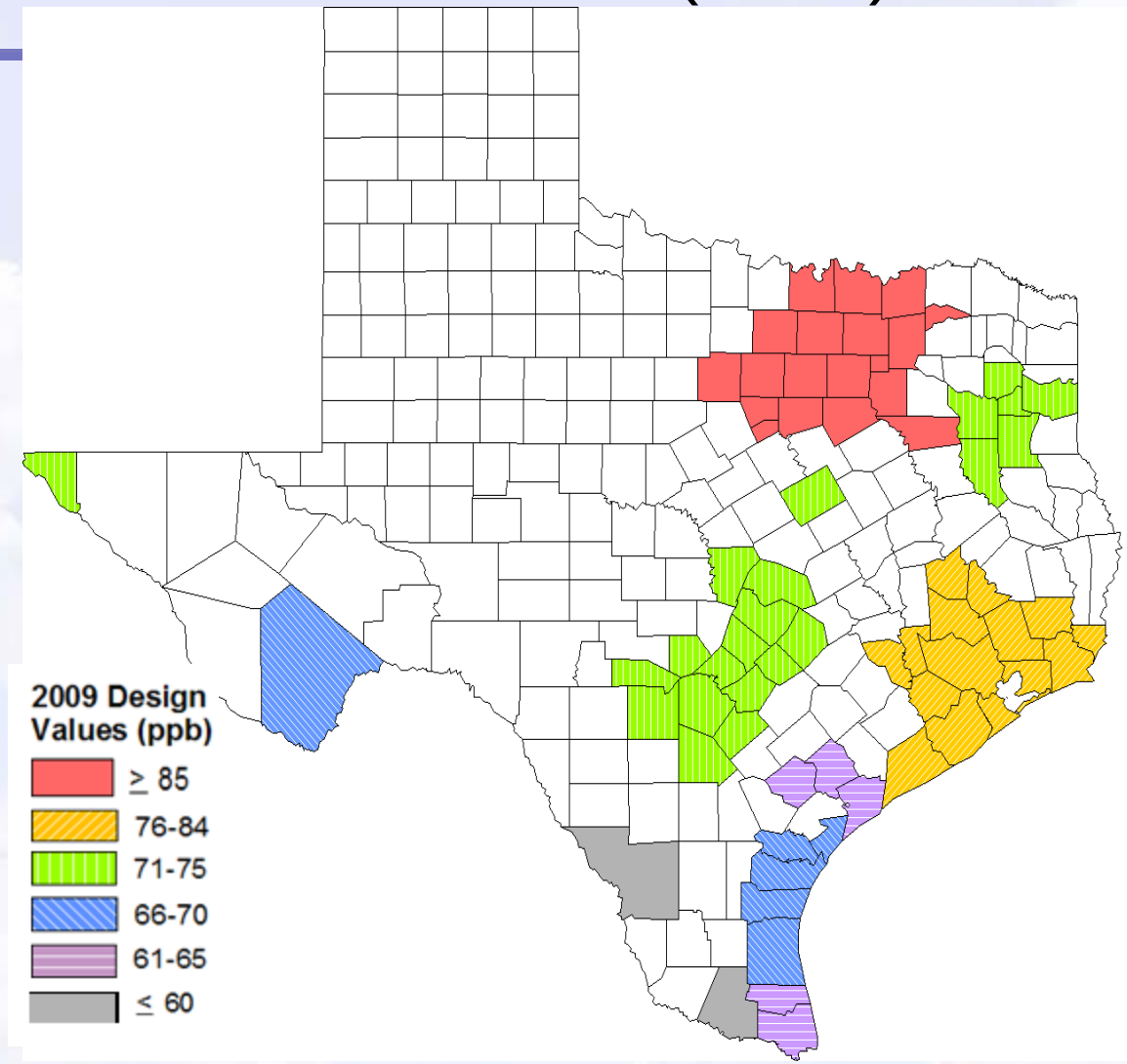
Background

- At least seven areas in Texas, from El Paso on the western edge to Beaumont-Port Arthur on the eastern edge, are currently above the proposed 2010 revised ozone NAAQS level (60 – 70 ppb).
- Many of these areas are likely to need photochemical modeling for their attainment demonstration SIPs, which will require new meteorological (WRF) and photochemical (CAMx) modeling domains since TCEQ modeling efforts have previously focused on HGB and DFW.
- The requirement for new modeling domains provided an opportunity for the TCEQ to review and evaluate features of the modeling domain, including the geographical mapping projection and the geographical extent of fine, intermediate and coarse grids.

2009 Primary Ozone Design Values by Combined Statistical Area (CSA)

CSA	2009 8-Hr Ozone DV (ppb)
DFW	86
HGB	84
BPA	77
NETX	75
ELP	75
ARR	75
SAN	74
WACO	72
CC	69
Big Bend*	66
VIC	65
LRGV	62
LAR	55



*Brewster County monitor is maintained by the national park service and reported in EPA AQS.

Geographical Mapping Projection

- For the eight-hour ozone NAAQS SIP modeling, the TCEQ has used a Lambert Conformal mapping projection with a center point at 100° W longitude and 40° N latitude with intersecting (true) latitudes of 30° N and 60° N
- This TCEQ mapping projection is slightly different than the national (RPO) mapping projection used by most other states, as well as EPA for national ozone modeling, which has a center point of 97° W longitude and 40° N latitude with true latitudes of 33° N and 45° N

Geographical Mapping Projection

- The main advantage of using the national projection criteria is direct compatibility of modeling files between the TCEQ and other modeling efforts.
- The main disadvantage is the effort required to shift:
  - New area source surrogates (population, density, urban area) will be needed to develop emissions for a new projection, since the grid is shifted.
  - There are some useful tools on EPA's web site that will at least initially lessen the added work - we'll be able to use those tools to develop surrogates for the coarse and intermediate grids. Fine grid surrogates will be refined over time using the TCEQ GIS capability.
  - Point source emissions are reported in latitude and longitude and placed in the model at their specific point, so shifting the grid does not impact point source emissions.

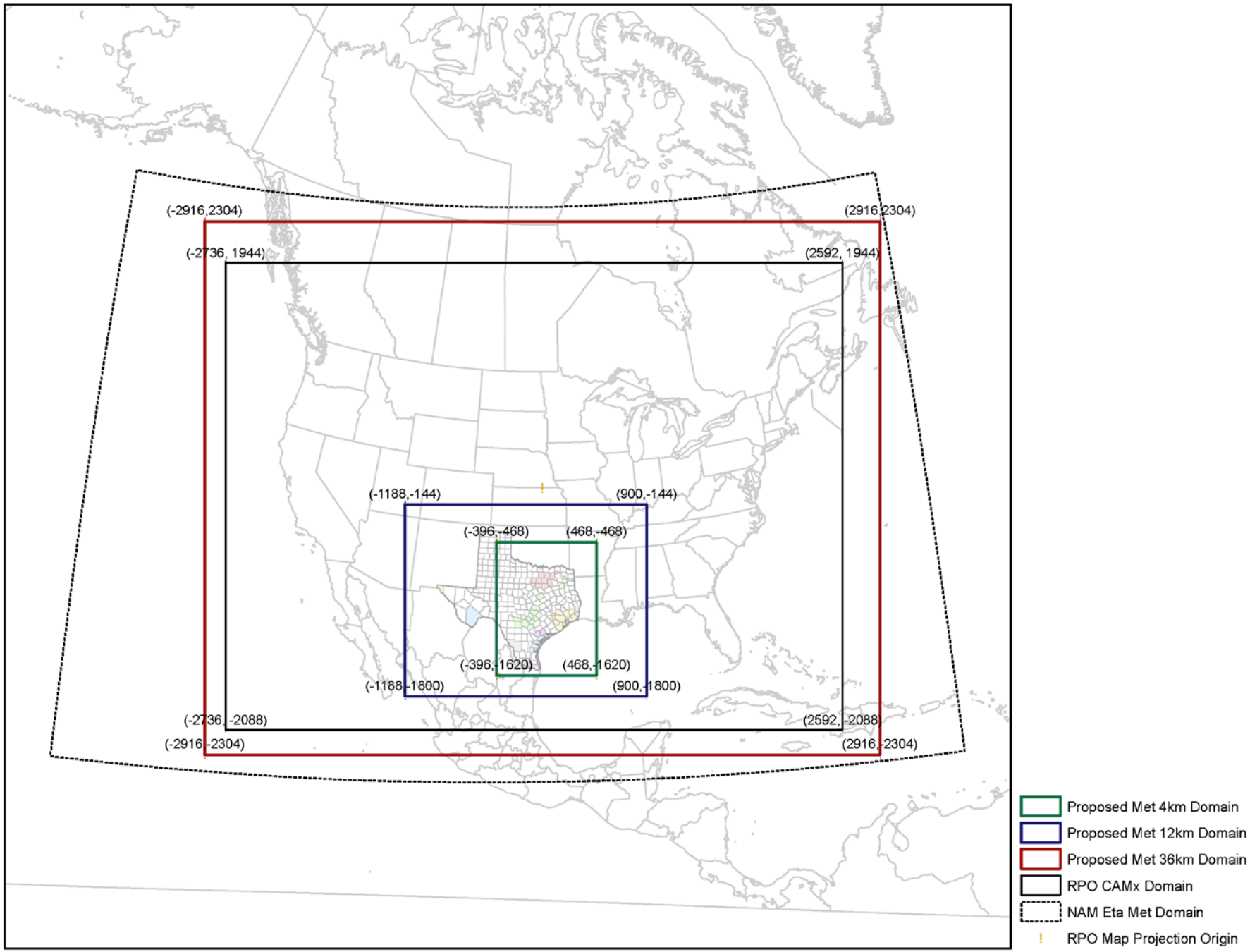
Geographical Mapping Projection

- Because significant additional work would already be required to increase the extent of 4 km emissions for new nonattainment areas (previous work has focused on DFW and HGB), this is an ideal time to consider shifting the grid.
- The TCEQ believes the advantages outweigh the disadvantages and are moving forward to develop the needed files to model the new projection for work conducted in support of 2010 ozone standard SIPs.
- The emissions files resulting from the new projection would ultimately be shared with all interested parties.

Domain Grid Size and Extent

- With the upgrade in the AMDA computer system and the migration to the WRF meteorological model, SIP modeling can be initiated on a 36 km coarse grid domain with an intermediate 12 km grid nested domain.
- Most of the expected nonattainment areas can be modeled with 4 km grid fine domains.
  - The El Paso area may only be modeled at the 12 km intermediate domain.
  - The HGB area is expected to need a 1 km grid domain to provide the necessary higher resolution for winds and emissions.

Texas Modeling Domains on RPO Map Projection



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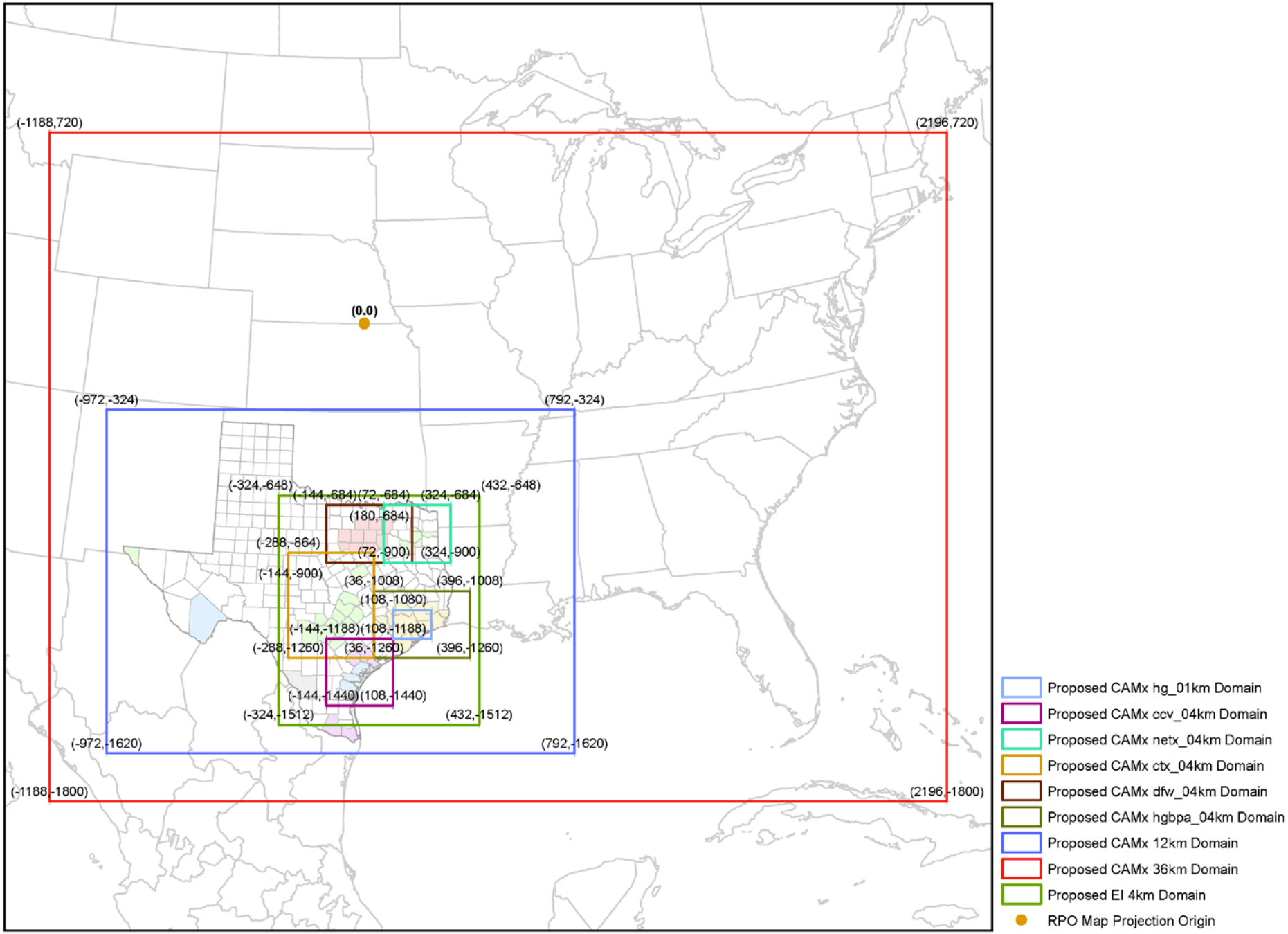

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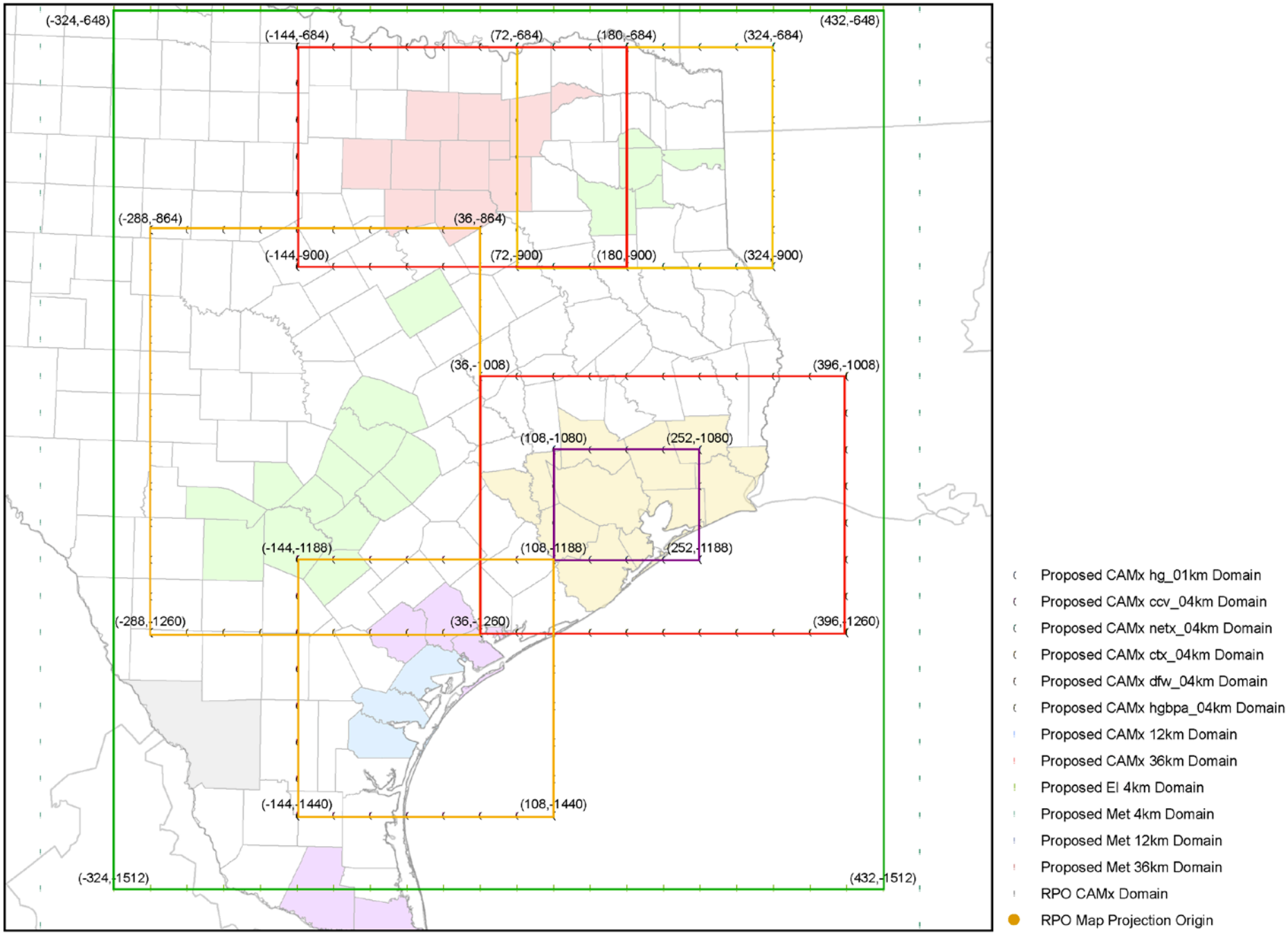

Area Abbreviations

Abbreviation	Area Name
hg	Houston/Galveston
ccv	Corpus Christi/Victoria
netx	Northeast Texas
ctx	Central Texas
dfw	Dallas/Fort Worth
hgbpa	Houston/Galveston Beaumont/Port Arthur