



Texas Air Quality Study II (TexAQS II)



Texas Air Quality Study II

- Background
- Why TexAQS II ?
- What is TexAQS II?
 - Objectives
 - Planning Process and Participants
- TexAQS II 2005 projects
 - Enhanced surface monitoring
 - Emission Inventory
 - How can you help?
- TexAQS II Funding
- Question and Answers



Background – **TexAQS 2000**

- **Focused on Ozone formation/accumulation in Houston**
- **One month intensive period (Aug/Sept 2000)**
- **TexAQS 2000 was composed of a number of state, federal, and academic organizations**
 - its own funding, objectives, special technical expertise
 - Approx \$20 million (including NOAA and DOE in-kind resources)
 - Joint development of TexAQS 2000 science plan
- **What did we learn?**
 - Ozone production more efficient by ship channel than urban emissions
 - Rate of ozone formation faster from HGA industrial emissions
 - Emissions underestimated, especially HRVOC
 - TexAQS 2000 provided a significantly improved scientific basis for SIP
- **Still More to Study**
 - In Houston and elsewhere
 - Additional emphasis: Spatial and temporal resolution of emissions



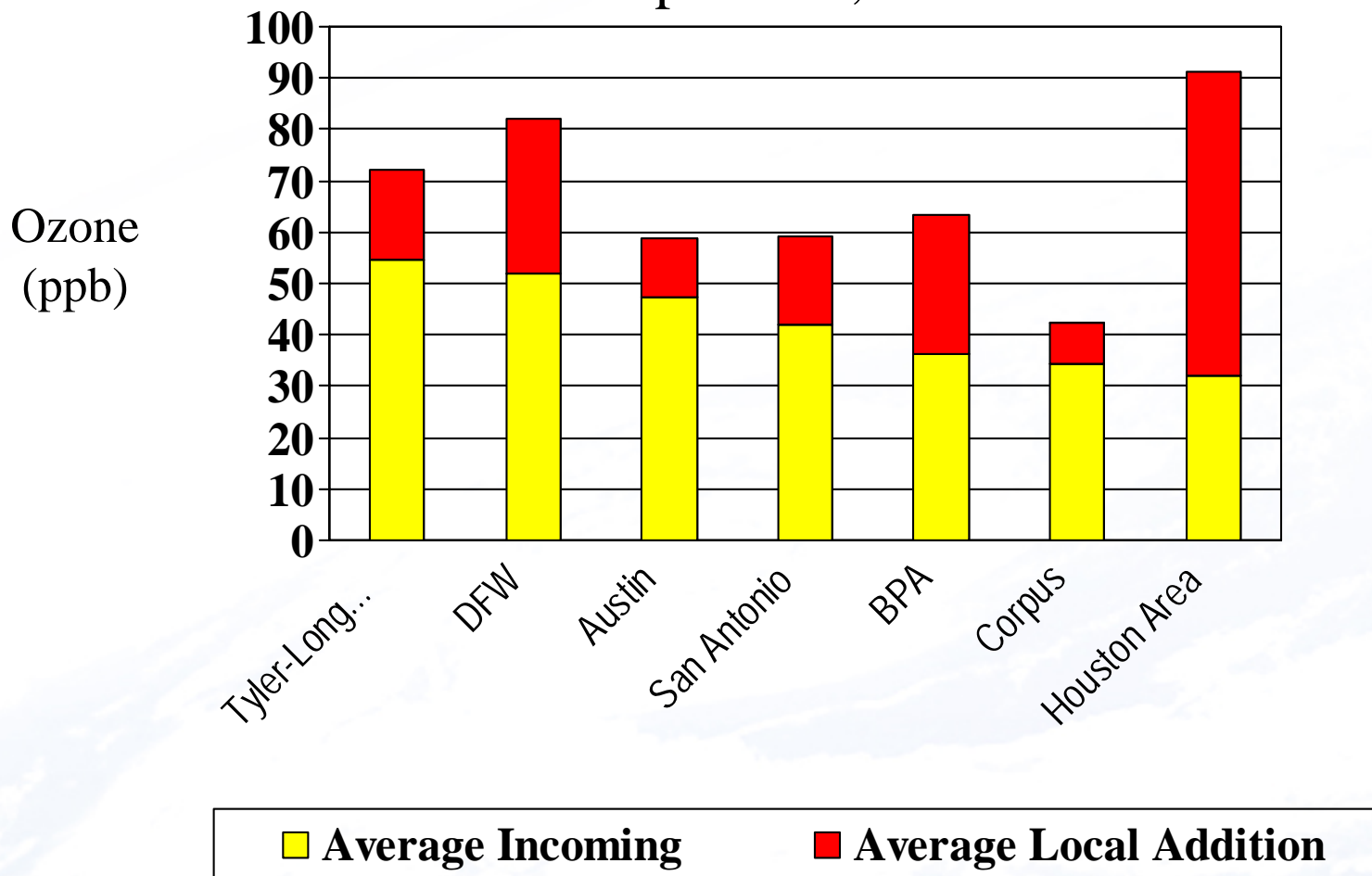
Why TexAQS II?

- **New Federal Standards and SIP requirements**
 - 8 Hour Ozone
 - Regional Haze
- **Higher Number of Non-attainment areas**
- **Transport is a major issue**
 - Larger area must be studied
 - Eastern Half of Texas (HGA, DFW, BPA, Tyler-Longview-Marshall, Austin, San Antonio, Corpus Christi)
 - Longer Period of time to document and analyze transport
 - 18 months instead of 1 month
 - May 2005 to October 2006



Transport – Qualitative Illustration

Average Peak 1-hour Ozone
June - September, 1998 - 2002





TexAQS II area of study



**TexAQS 2000
Study Area**



What is TexAQS II: Objectives

- **Inventories for ozone precursors**
 - Annual and hourly point source, area, non-road, on-road, biogenic
- **Characterize ozone and regional haze transport**
 - Into, within, and out of Texas
 - Enhanced monitoring in rural areas and borders of Texas
 - Enhanced meteorology data in all seasons (18 month period)
- **Evaluate formation and accumulation of ozone**
 - both urban and regional
 - Photochemical modeling must replicate as 8-hr rolling average
- **Quantify Source Contributions for Regional Haze SIP**
 - Enhanced monitoring near Class I areas in Texas and Texas borders affecting other states Class I areas



What is TexAQS II: 2005-2006 Plan

- Pre-study Period
 - Sept 2004-May 2005
 - Planning
 - Inventory Projects
- Phase 1: Extended period
 - 18-month, May 2005-Oct. 2006
 - Inventory Projects
 - Enhanced monitoring:
 - Ozone and regional haze transport
 - Ozone chemistry
 - Planning for Intensive
- Phase 2: Intensive period
 - Six weeks: August – Sept. 2006
 - Multiple aircraft, research ship; NOAA, DOE



TexAQS II Planning

- Two large Science Coordinating Committee (SCC) planning meetings (Feb and Oct, 2004):
 - Over 100 participants
 - Developed TexAQS II Science Plan Objectives
 - Over 100 suggested projects for TexAQS II field implementation
 - Evaluated and prioritized relative to TexAQS II key objectives (High, Medium, Low and Defer) through SCC workgroups

**TexAQS II Coordinating Committee
(Logistics and Funding Needs)**

Texas Commission on
Environmental Quality

**Science
Coordinating
Committee**

Prior
Research
Needs
Assessment

Revised Research
Needs Assessment
With Priorities

Proposed Research
Recommendation
to SCC

Air Quality Research Partnership

Texas Commission on Environmental Quality*

Texas Environmental Research Consortium*
Contract Manager: Houston Advanced Research Center (HARC)

Texas Air Research Consortium*

Texas Universities

TERP:
New Technology Research and Development*

Industry

*each entity provides funds and has a process for awarding contract dollars.



TexAQS II Planning Participants

- TCEQ
- Research Scientists
 - National Oceanic and Atmospheric Administration (NOAA)
 - Department of Energy (DOE)
 - Universities (U of Alabama-Huntsville, Baylor, U of Colorado, Georgia Tech, U of Houston, Lamar, North Carolina State, U of North Carolina, Rice, UT, Texas A&M, Texas Tech, etc.)
- EPA
- Non-Government Research Institutions: Texas Environmental Research Consortium (TERC), Houston Advanced Research Center (HARC), Texas Air Research Center (TARC), Houston Regional Monitoring (HRM) Network
- Local Governments
- Contractors
- Industry
- EPA



TexAQS II Planning

TCEQ Science Coordinating Committee workgroups

- Surface Monitoring and Transport
- Fenceline Remote Sensing
- Aircraft Instrumentation
- Satellite / Land Cover
- Emission-Ambient Reconciliation
- Regional Haze and Transport
- Operational Forecast Support
- Data Handling & Archiving; Communication



TexAQS II Planning

- **Developed TexAQS II field implementation plan**
 - Primarily focused on FY05
 - incorporated high priority projects within budget
 - Funds:
 - TCEQ Technical Analysis Division Budget
 - TCEQ New Technology Research and Development Program
 - Texas Environmental Research Consortium
 - Texas Air Research Center
 - Near Non-attainment Planning Organizations
 - EPA Performance Partnership Grant
 - In-Kind Resources
 - NOAA radar profilers



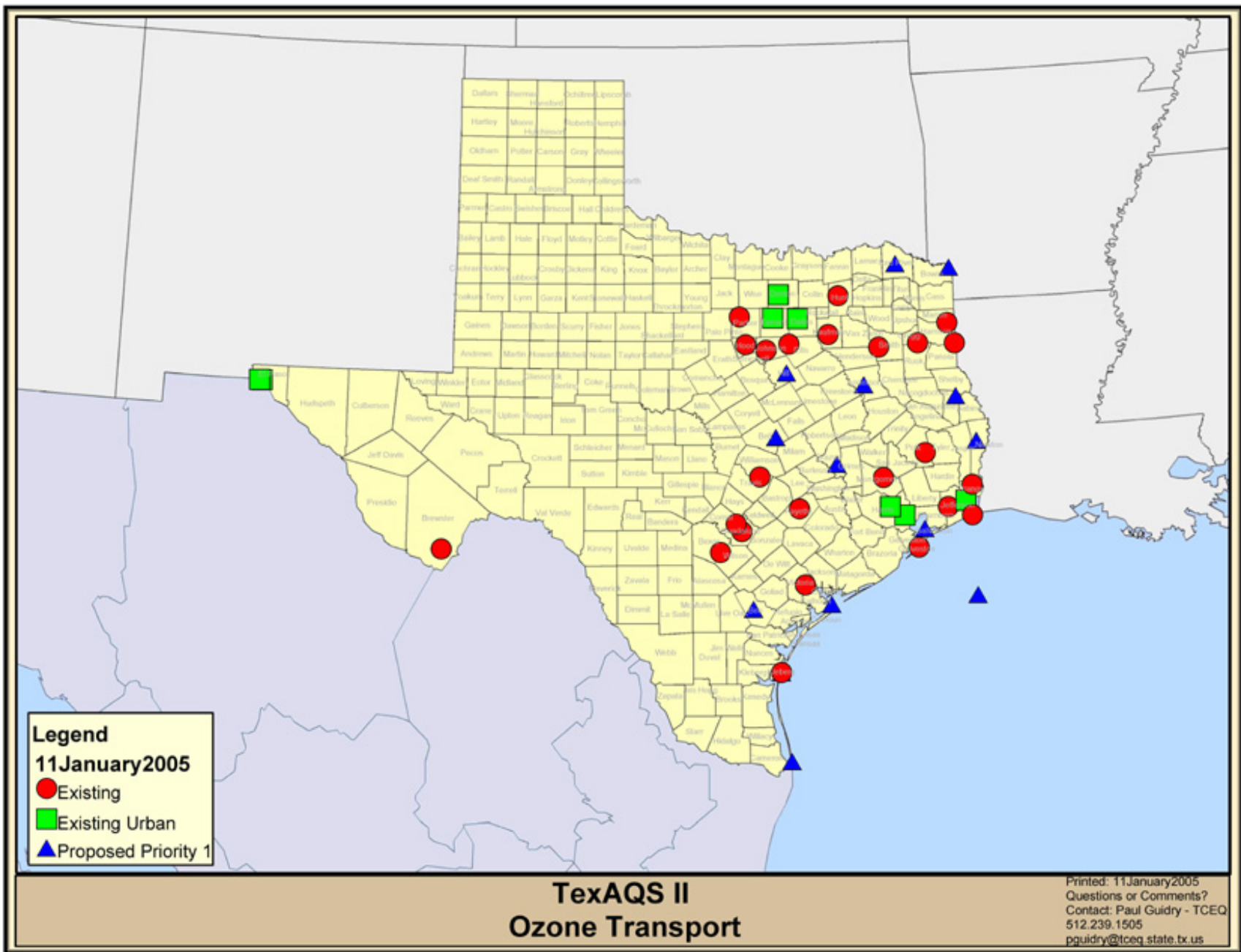
TexAQS II, 2005 Projects

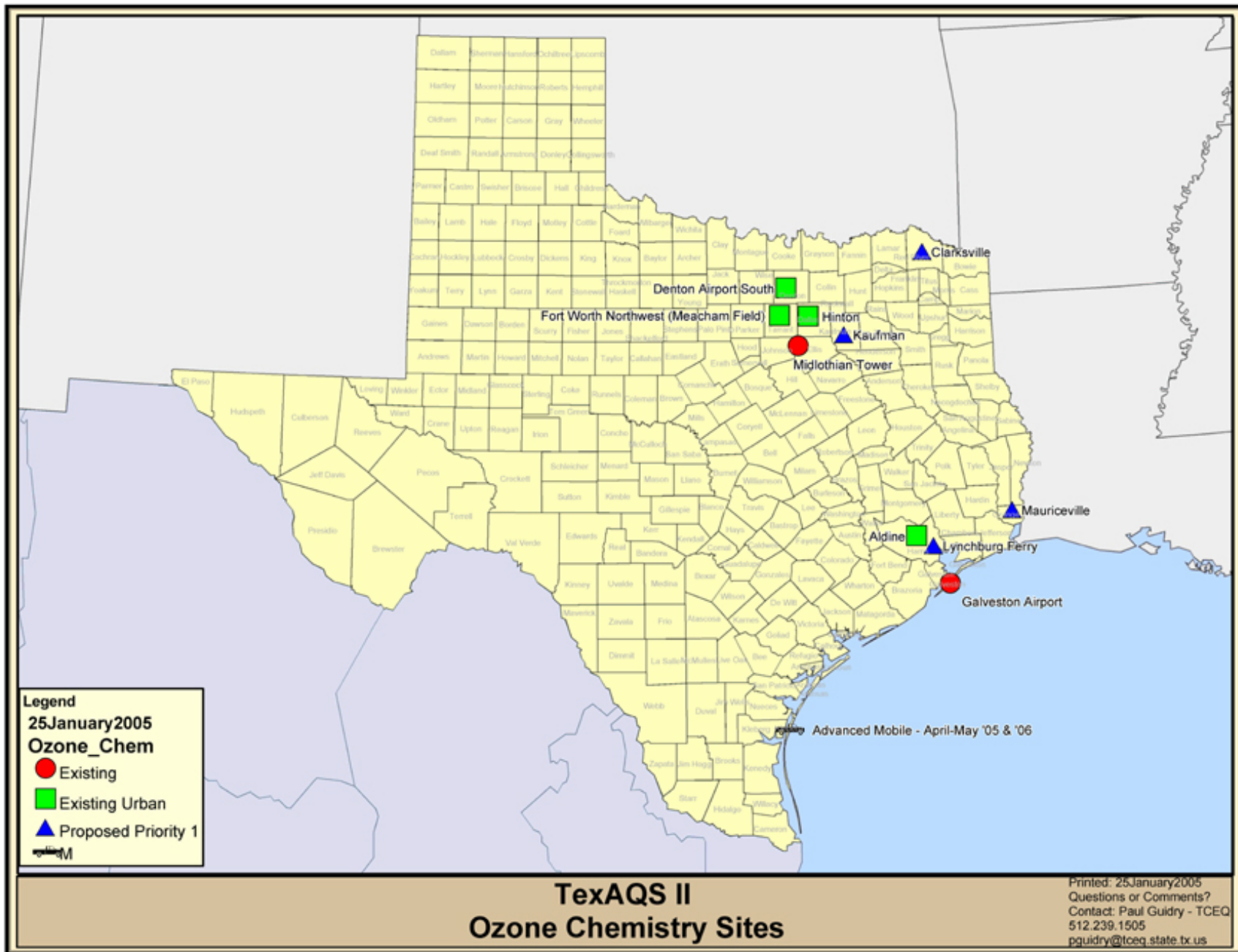
- **Finalized enhanced surface monitoring plan** (Dec 2004)
 - Includes ozone, meteorology, regional haze, profilers
 - Planned to be operational May, 2005
- **Finalized FY05 additional project funding** (Jan 2005)
 - TexAQS field support: Daily forecasting, data handling
 - Additional Upper Air Meteorological Measurements
 - Bottom Up Emission Inventory Projects
 - Remote sensing for un-reported/under-reported emissions
 - Hourly Inventory Plans

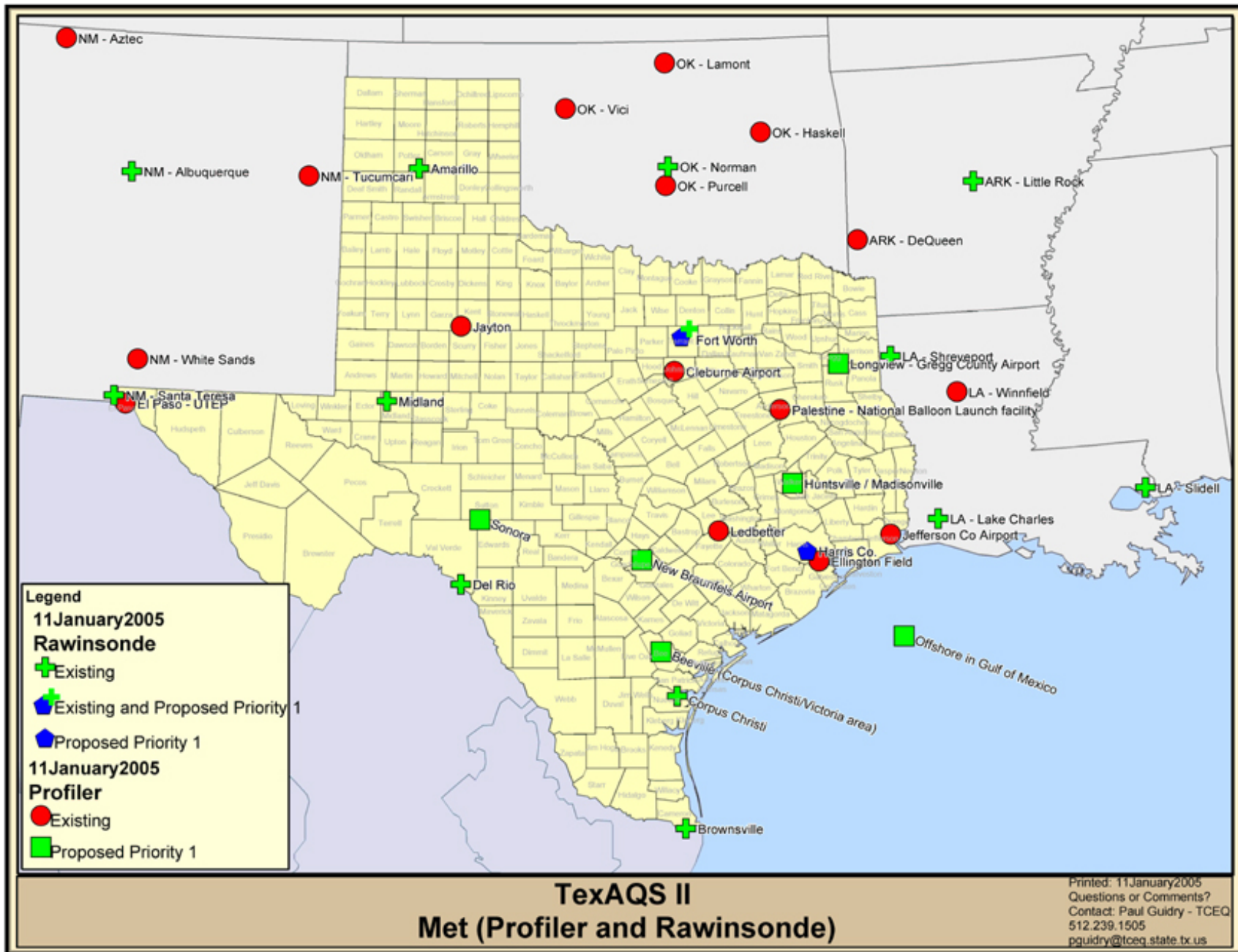


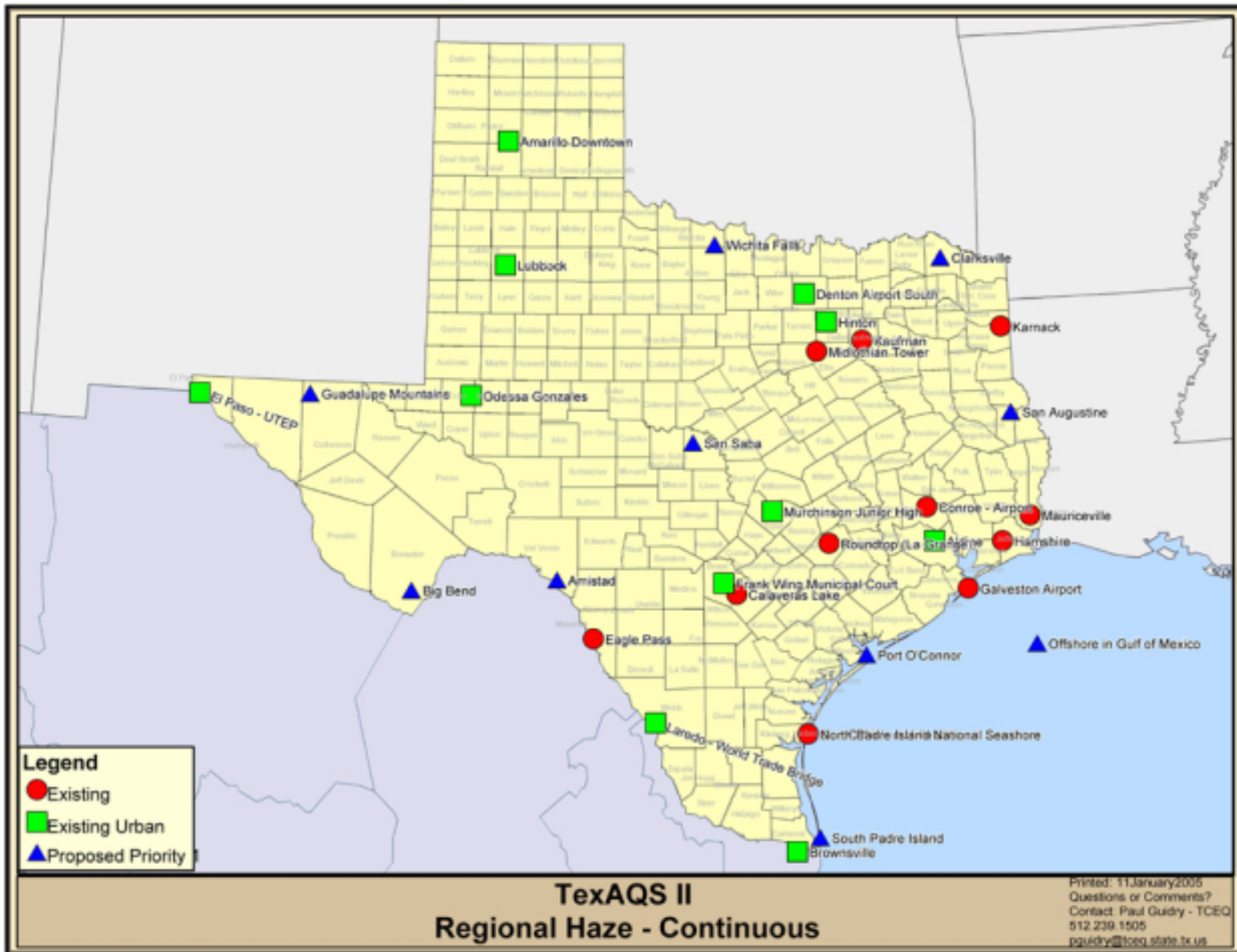
TexAQS II Surface Monitoring Plans

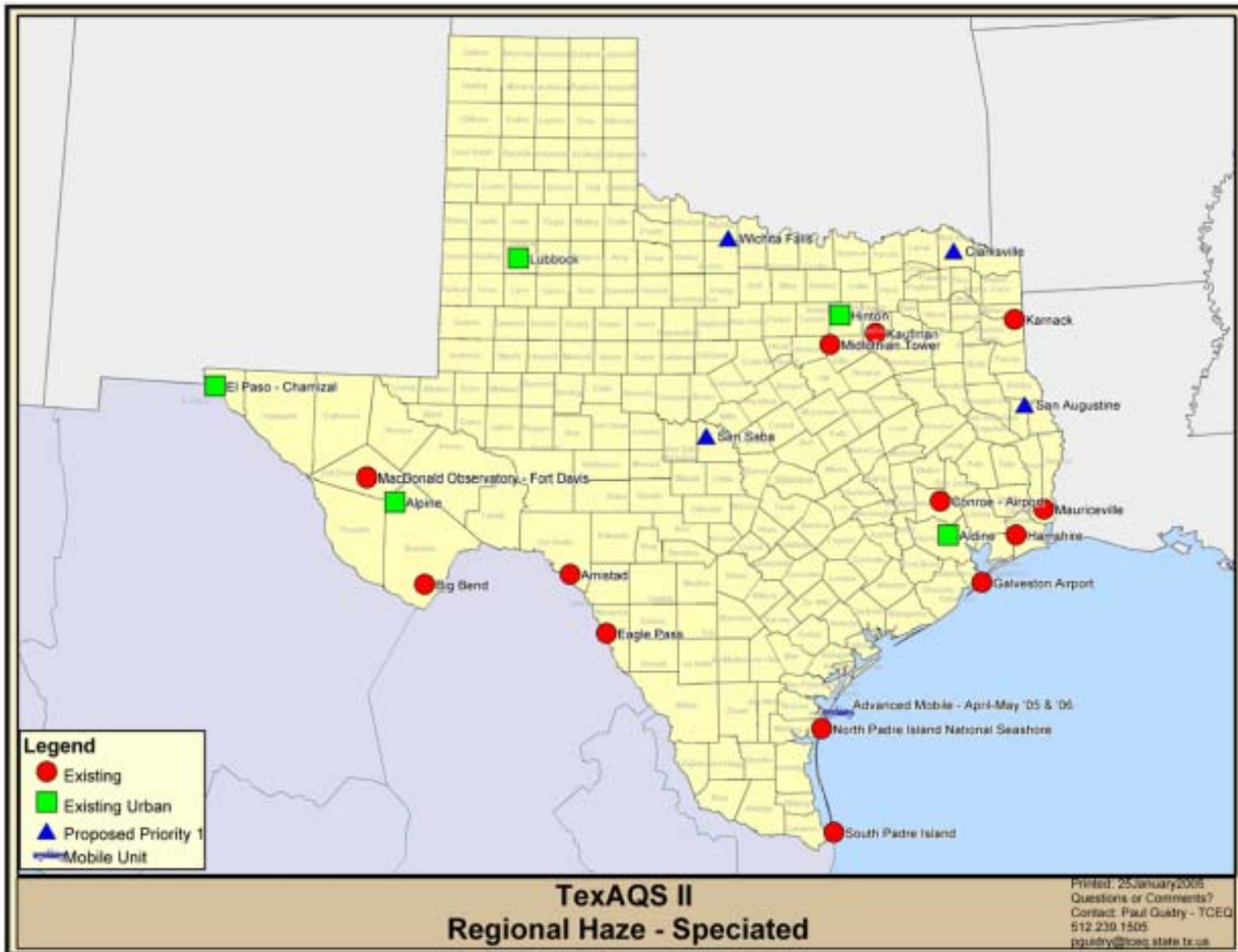
- **Rely on existing Monitoring where possible; new to fill gaps**
- **Ozone Transport**
 - Low Cost Ozone
 - 10 meter meteorological tower (wind direction, wind speed, temperature)
- **Advanced Chemistry**
 - Ozone
 - NO_x, NO_y
 - CO and SO₂ at low concentration as tracers for combustion/urban/biomass
 - Sometimes Formaldehyde
 - A&M Advanced Chemistry and Regional Haze trailer
 - North Padre: April/May 2005
 - DFW: remainder of 2005
- **Continuous Regional Haze**
- **Speciated Regional Haze**
 - every 6 days and when triggered by event













TexAQS II, 2005 Projects

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TexAQS II FY05 projects

- **Additional Upper Air Meteorological Measurements**
 - UofH tethersondes in Houston
 - A&M Dual Doppler Radar initially at DFW

- **TexAQS field support:**
 - Daily forecasting (A&M and UofH)
 - Information and data access from a centralized location (TCEQ TexAQS website)
 - GIS display of inventory, forecasts, planned and executed aircraft flights



TexAQS II FY05 projects (cont'd)

- **Satellite data**
 - biogenics emission estimate
 - Meteorological data
 - wildfires
- **Bottom Up Emission Inventory Projects**
 - cooling towers, flares, fugitive leaks, and dockside marine vessel activities.
 - on-road mobile sources, small diesel generators, diesel construction equipment, oil and gas compressors,
 - gasoline non-road and area sources, railcars, commercial and industrial equipment, locomotives



TexAQS II FY05 projects (cont'd)

- **Remote sensing monitoring for un-reported and under-reported emission sources**
 - Wood pulp mills, transmission pipelines, dockside marine vessel activities
 - Special Butadiene Project
- **Hourly Inventory Plans**
 - Selected Accounts (May-June 2005)
 - Selected EPN/FINs
 - CEMs/PEMs
 - Emission Events
 - Using STARS to store
 - Contractor to develop upload tool for those not set up for electronic reporting to STARS
 - Volunteers to alpha test in March 2005



TexAQS II Funding

- Total Funds needed: over \$35 million
 - fiscal years 2005, 2006 and 2007
 - includes NOAA and DOE in-kind resources (estimated \$10-15 million)
- Total Committed/Budgeted FY05: approximately \$5 million state money
 - TCEQ TAD
 - TCEQ NTRD
 - Near Non-attainment Planning Organizations
 - EPA PPG
 - TERC
 - TARC
- FY06/07 Requested:
 - State money from Legislature each year of the Biennium
 - TCEQ, TERC, TARC
 - Federal Funds:
 - Request to Congress from TX Universities \$12 M
 - Possible EPA PPG
 - NOAA/DOE: funding level uncertain



FY06/07 TexAQS II Plans

- **Finalize FY06/07 TexAQS II project plan**
 - Depends on legislative funding for biennium
 - Continue Surface Monitoring



TexAQS II

Question and Answer ???

For more information on TexAQS II plans
visit TCEQ web site at:

www.tceq.state.tx.us/policy/ta/am/TexAQS_II.html