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Diversifying University Lands' Energy Portfolio – Spotlight on Renewables

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UT Energy Week @ UT Austin

Agenda

- PUF Lands/UL Overview & Key Stats
- UL's Focus on Emissions Reductions
- New Business Focus: Renewables

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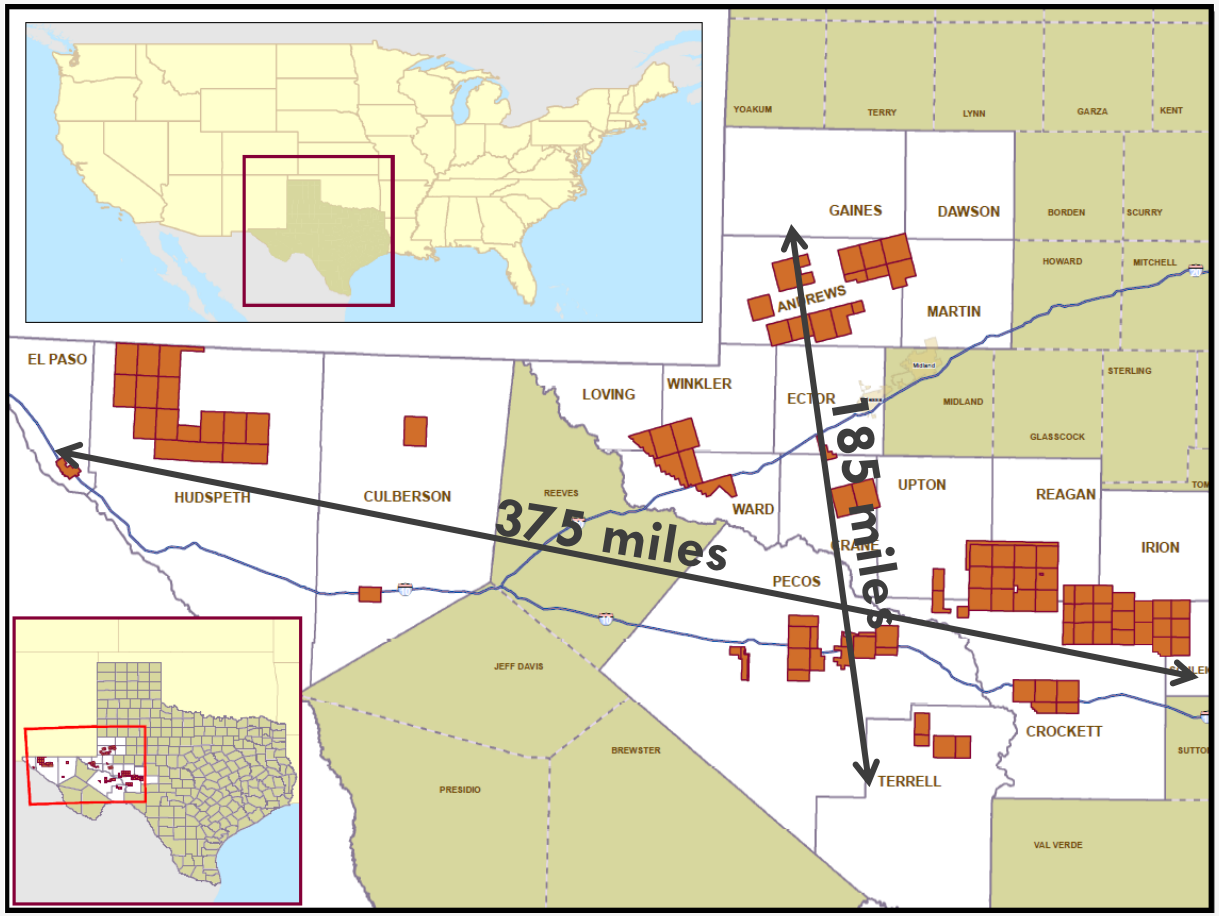
The PUF Lands & University Lands Organization



- Surface and mineral rights of 2.1 million acres of "PUF Lands"
- History of land dates back to 1838; first oil discovery in 1923
  - 20,000 wells drilled to-date
  - 9,000 wells currently producing
  - >20,000 identified locations
  - 4,000 leases, 250+ operators
- Surface leases:
  - Pipelines and power lines
  - Grazing and ranching
  - **Renewables - wind and solar**
  - Water sales & infrastructure
  - **Environmental programs**
- Primary revenue driver is mineral royalty revenue

- Revenue support UT & A&M System via the "PUF" and "AUF"

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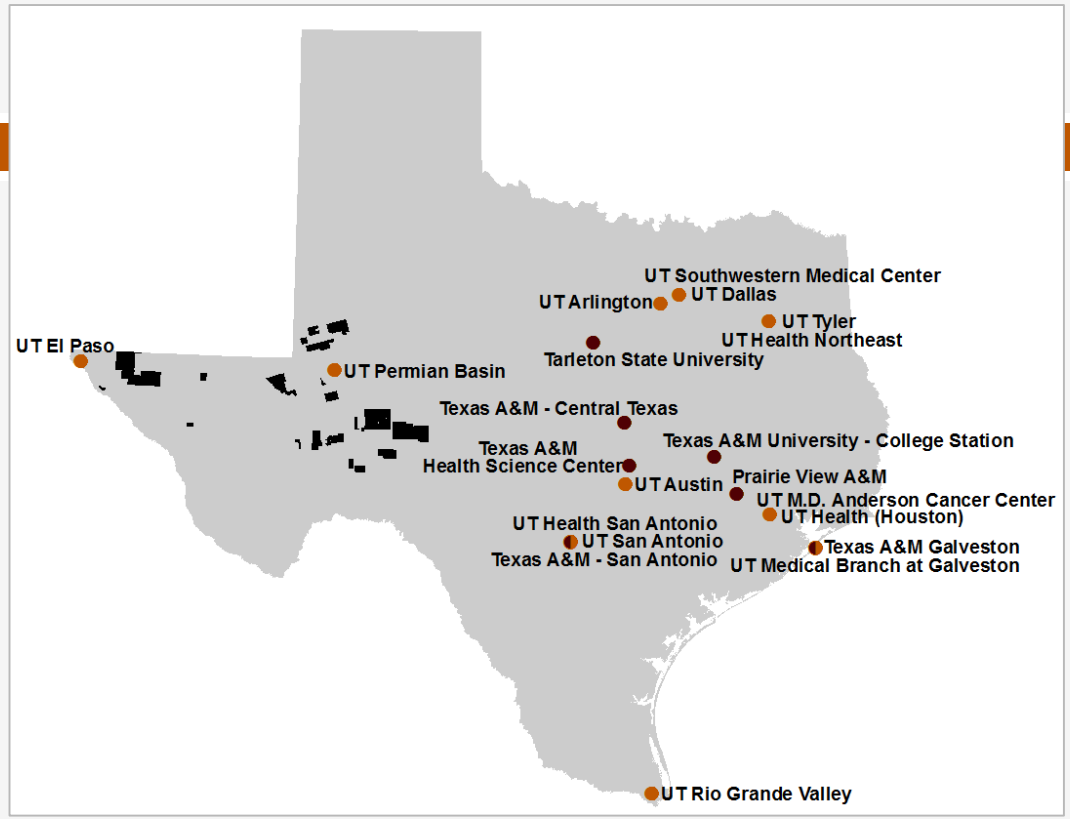
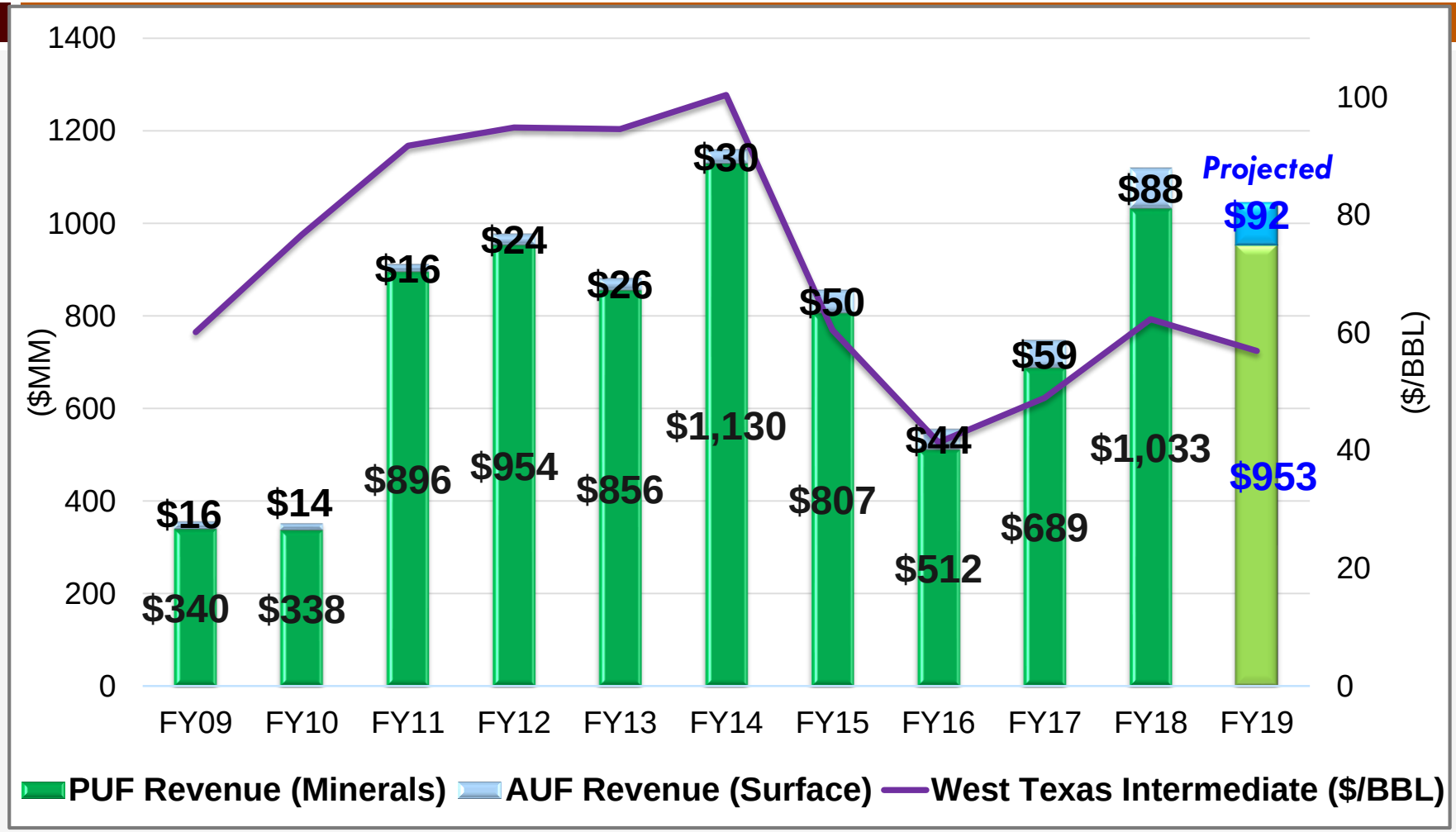
The Permanent University Fund ("The PUF")

- Benefits 25 institutions across UT and A&M Systems
- ~$21 Billion Market Value
  - ~5% annual distribution
    - 2/3 to UT System
      - ~45% to UT Austin
    - 1/3 to A&M System
- Surface revenue goes into separate fund (AUF), which is immediately available to the schools that year
  - Wind, solar and water → AUF



Historical AUF and PUF Revenue vs. Oil Price



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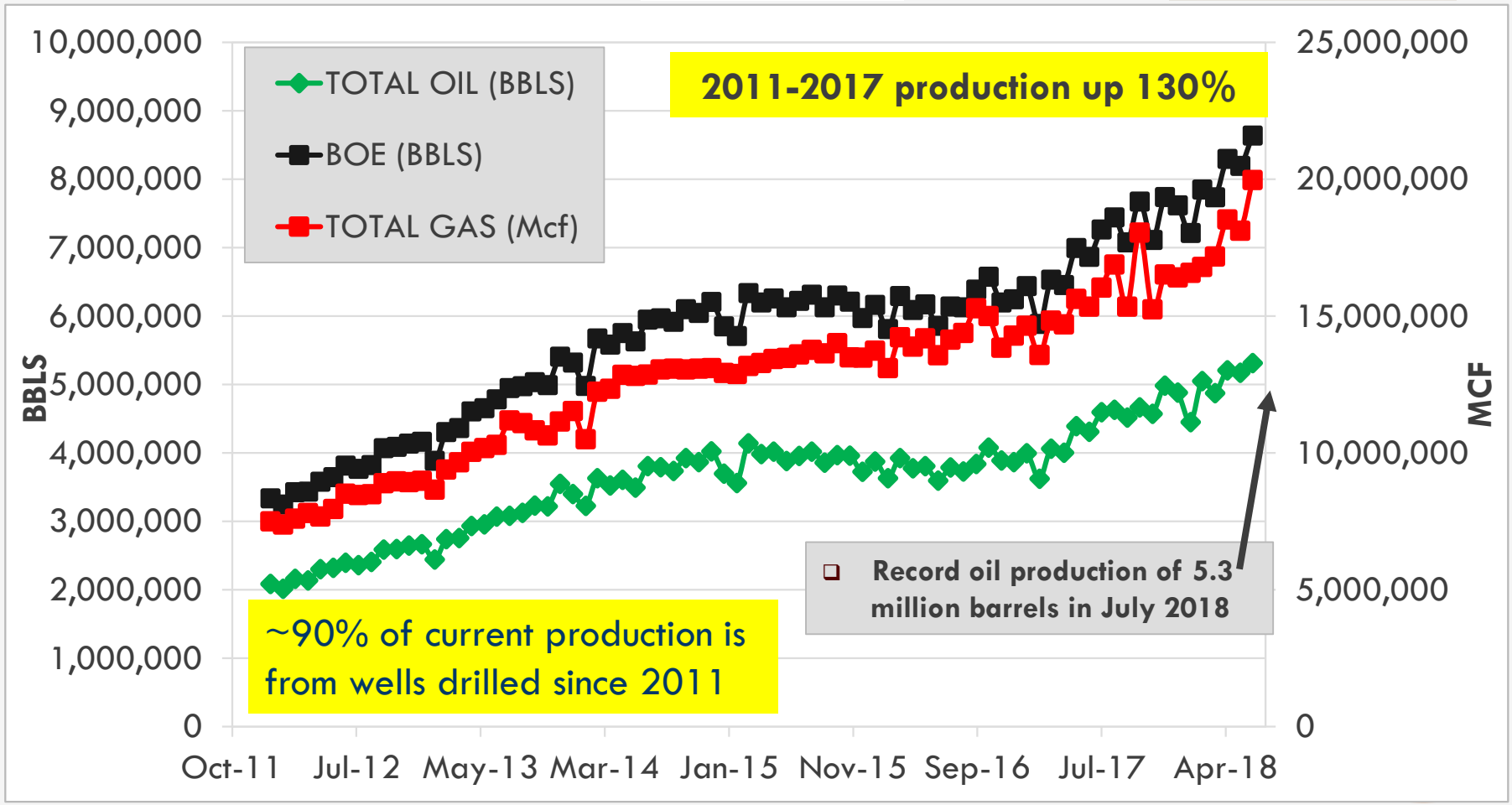
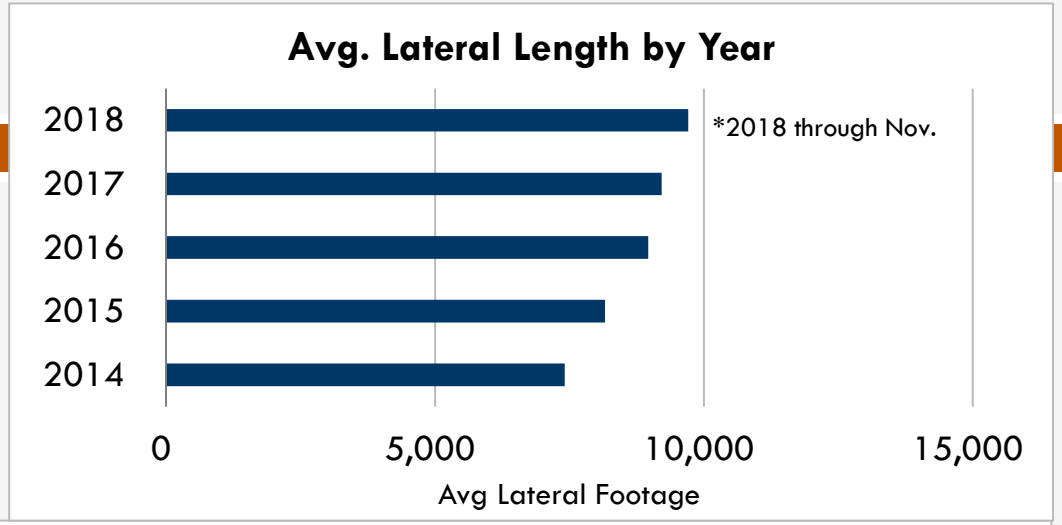
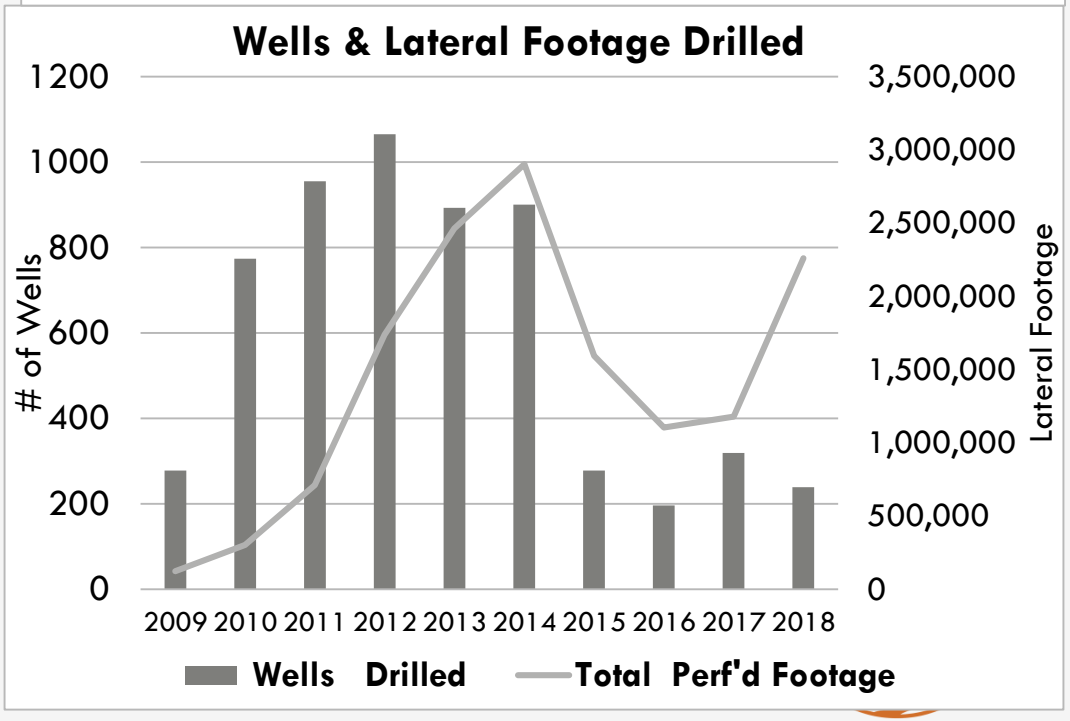
PUF Lands Gross Monthly Production



Impact of Horizontal Drilling is Reducing Surface Footprint

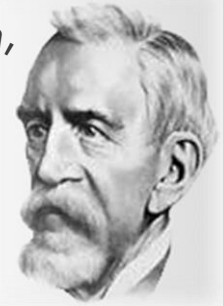




PUF Lands: Vision & Impact

"Texas holds embedded in its earth rocks and minerals which now lie idle because unknown, resources of incalculable industrial utility, of wealth and power. Smite the earth, smite the rocks with the rod of knowledge and fountains of unstinted wealth will gush forth."

- Ashbel Smith, M.D., first U. T. Board of Regents Chairman at the dedication of the University of Texas, 1881



Economic Impact Today:

- 7,400 Full time equivalent "personnel" are at work on PUF Lands every day, with thousands more spending part of their day there
- Each year since 2012, commercial activity on PUF lands has generated:
  - ~$3.5 billion in gross product
  - ~33,000 indirect jobs across Texas
  - ~$176 million in state tax revenue
  - ~$40 million in local tax revenue
    - School districts containing PUF lands accrued ~$16 million, or ~$166 per student!

Source: The Perryman Group

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University Lands: Economic Development Opportunities

Effective Corporate Structure

Oil and Gas

Water Resources

Solar and Wind

Other Surface Activities

Excellent Environmental Stewardship

*note: not to scale

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University Lands: 20 Year Vision

- **Oil and gas will continue to be predominant revenue source**
  - Drilling inventory of 30+ years at normalized rates
  - Production levels could increase 50-100% over time
  - Technology will improvements in all parts of operations, including environmental performance
  - Most demand forecasts indicate fossil fuels needed into long-term to support the developing world's emergence into the middle class
    - Electricity will skew towards renewables in the shorter term, with transportation and industrial will take much longer to catch up
- **Water resources will be a significant contributor to West Texas infrastructure improvement, development**
- **Solar and wind energy will be developed widely across PUF Lands**

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EMISSIONS

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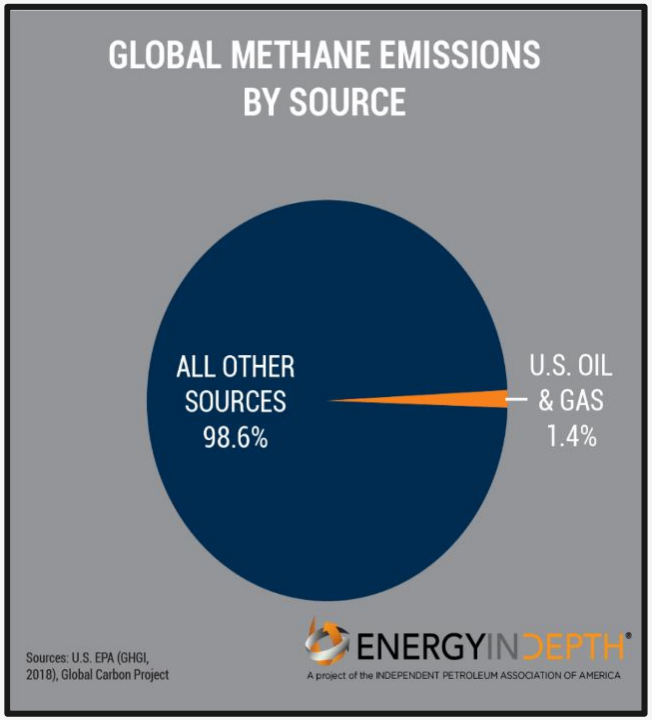
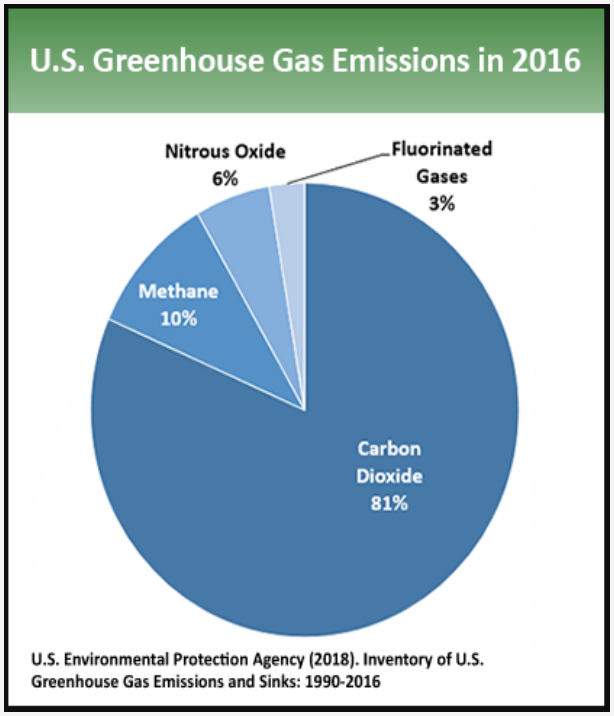
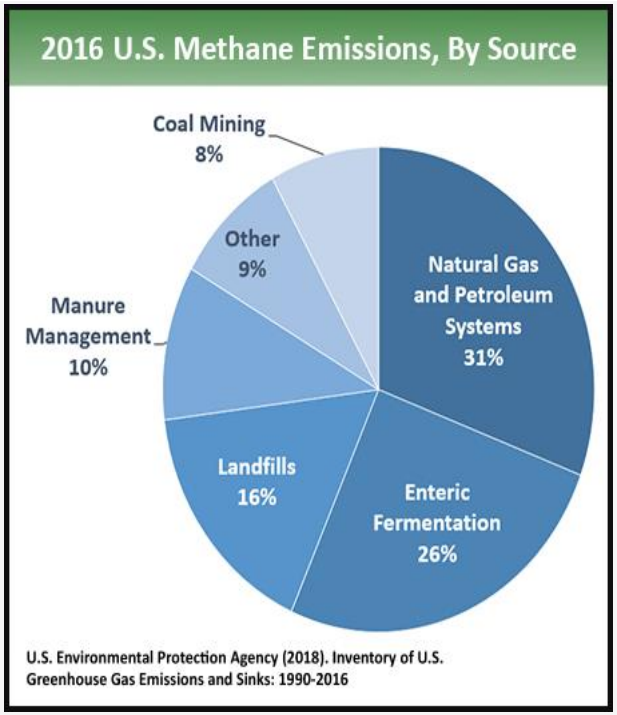
Emissions from U.S. Oil and Gas – Some Context







- U.S. Oil and Gas Industry – 1.4% of global methane emissions
- Methane Emissions are 10% of total U.S. greenhouse gas emissions
  - Natural gas and petroleum systems = approximately 1/3 of the 10%

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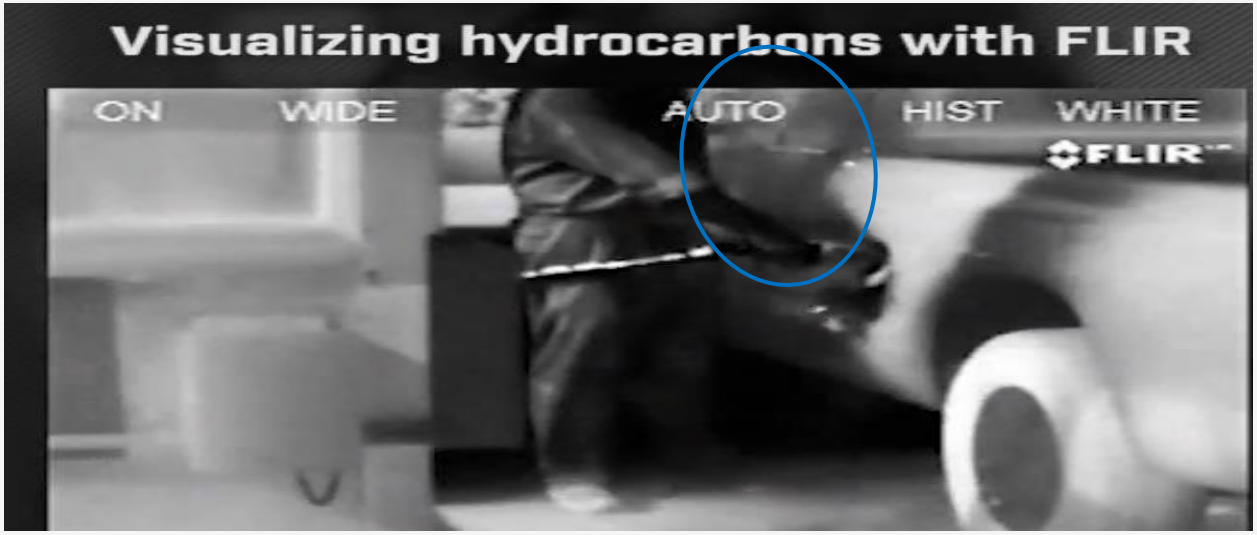
Infrared Camera Emissions Detection



Infrared cameras are helpful, but they're not **quantitative**.

Sometimes it's steam.

Similar black smoke below at the gas pump. Landfills, cows/agriculture, and human flatulence look similar.

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UL IR Camera Emissions Inspections

Sept. 2018 to present

Site Visits by UL	Operating Companies	Emissions Events Observed
154	33	55

New Tank Battery Facility: Four (4) Vapor Recovery Towers (VRT), One (1) Vapor Recovery Unit (VRU) & SPCC i.e. Lined Spill Prevention Containment.

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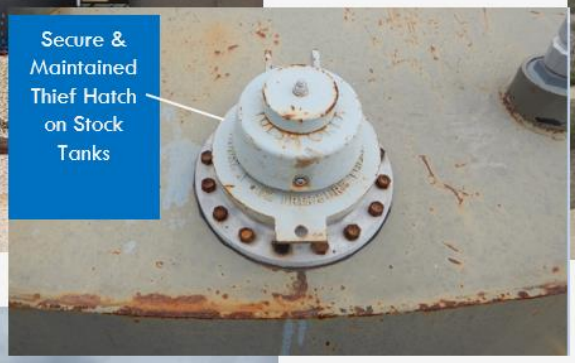
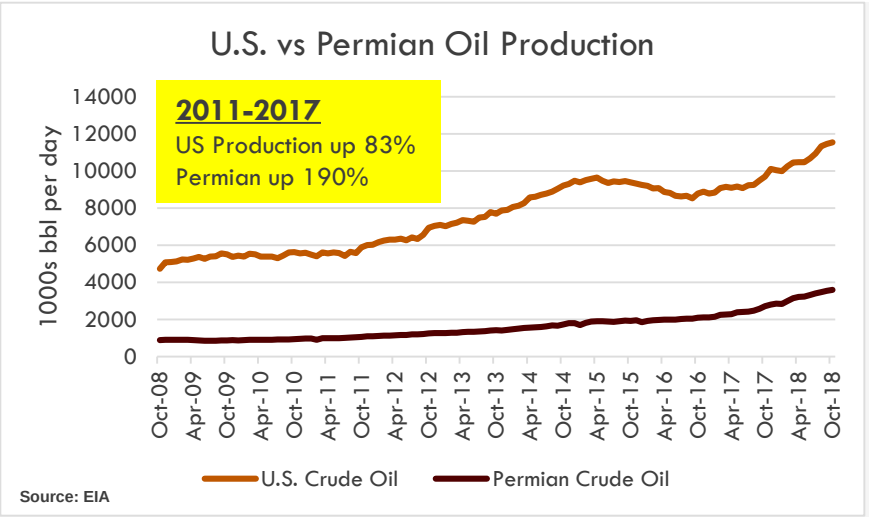
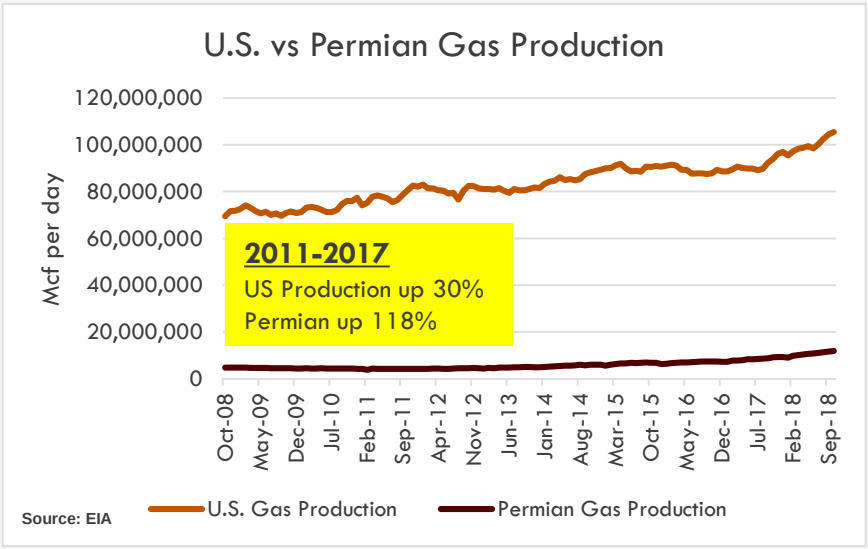
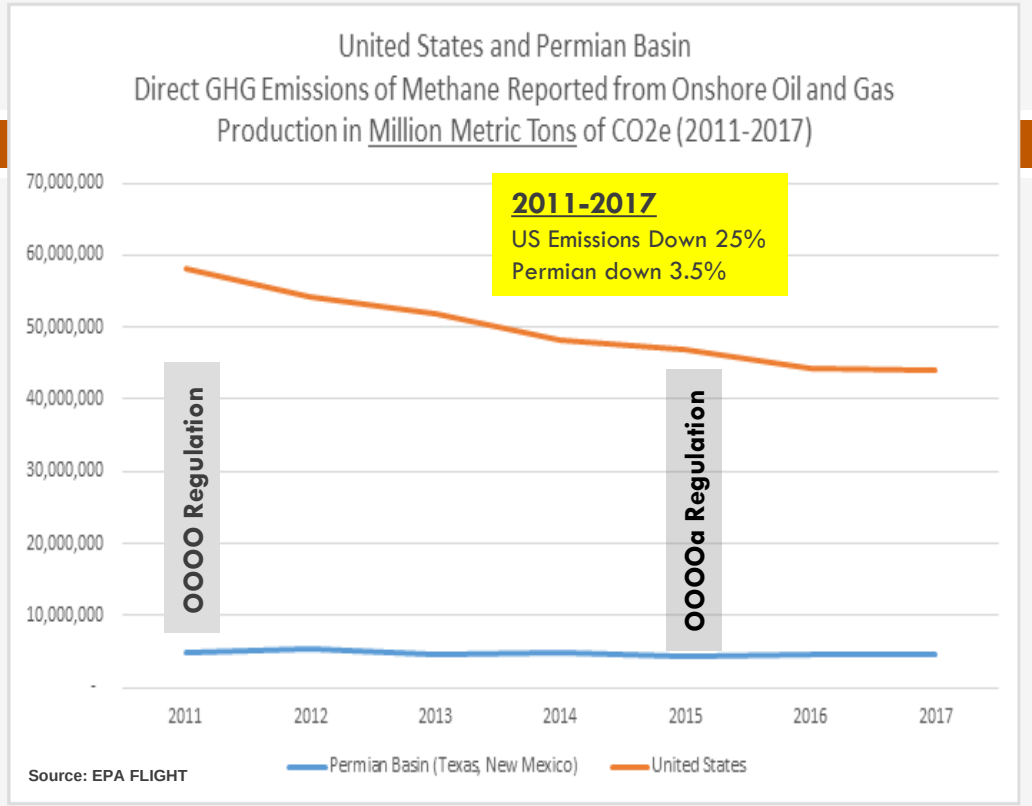
Emission Inspections



US and Permian Production & Emissions Performance







- **UL believes downward trend will continue due to:**
  1. Continued advances in technology
  2. Continued regulation by regulators
  3. Continued self-regulation by industry

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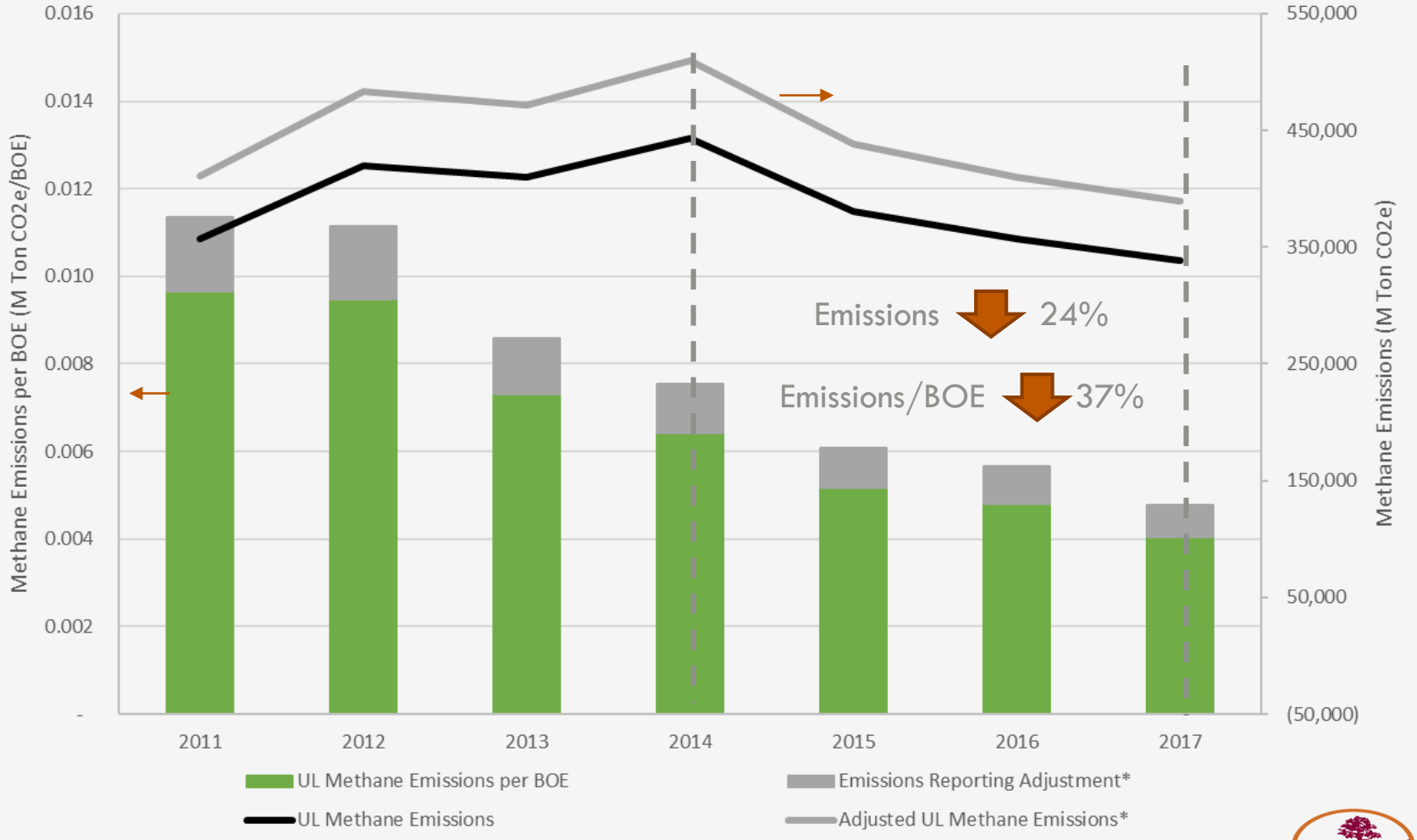
PUF Lands' Operators Methane Emissions



*Accounts for 15% of production on UL Lands without reported emissions, per EPA

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Government Regulators & Self-Regulation Initiatives

THE ENVIRONMENTAL PARTNERSHIP

RAILROAD COMMISSION OF TEXAS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

2011 – OOOO - LDAR programs
2015 – OOOOa - pneumatic devices

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

ONE OUR NATION'S ENERGY FUTURE

OIL AND GAS CLIMATE INITIATIVE

World's largest oil and gas companies' commitment to 20% reductions by 2025

Tying emissions reductions to exec. compensation

UL Emissions Reductions Initiatives

- **UL Oil & Gas Lease requires law, best practices & royalty paid on flared volumes**

Lessee will use highest degree of care, necessary safeguards … to prevent contamination of any environmental medium including soil, surface water, subsurface strata, ambient air … Lessee will clean up, remove, remedy soil and groundwater contamination and release of any Hazardous Material, minimize light pollution, capture and minimize air pollution and emissions … Must meet Lessor satisfaction and meet or exceed EPA and State regulatory requirements …"

- **New emissions-focused Facilities Engineer**
- **New Infrared camera (~$100,000) used in lease inspections (~154 since September)**
- **Environmental Stewardship Incentive Cost-share Program targeting emissions**
- **2018 Alignment with The Environmental Partnership**
- **Low production lease & marginal well abandonment initiative – new focus in 2018**
- **Satellite imagery to compare permits to existing flares**
- **Conversations with UT Austin emissions expert, Dr. David Allen**
- **Dialogue with oil and gas companies and industry associations (TXOGA, IPAA)**
- **Currently working on "emissions reductions best practices" to publish**
- **Future annual report that would include environmental performance**

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RENEWABLES

History / Process

- Two of the first wind farms in Texas built on PUF Lands in 2001
- Started getting approached by solar developers in 2015 – recent "land rush" kicked off
- In 2016, issued RFP inviting solar development onto UL
  - UT Austin Energy Institute conducted a solar resource assessment in advance of RFP to inform the process
- Since then, 4 solar leases; 3 wind leases have been executed
  - Two 2001 wind farms have been recharged/upgraded and the contracts aligned with current commercial terms

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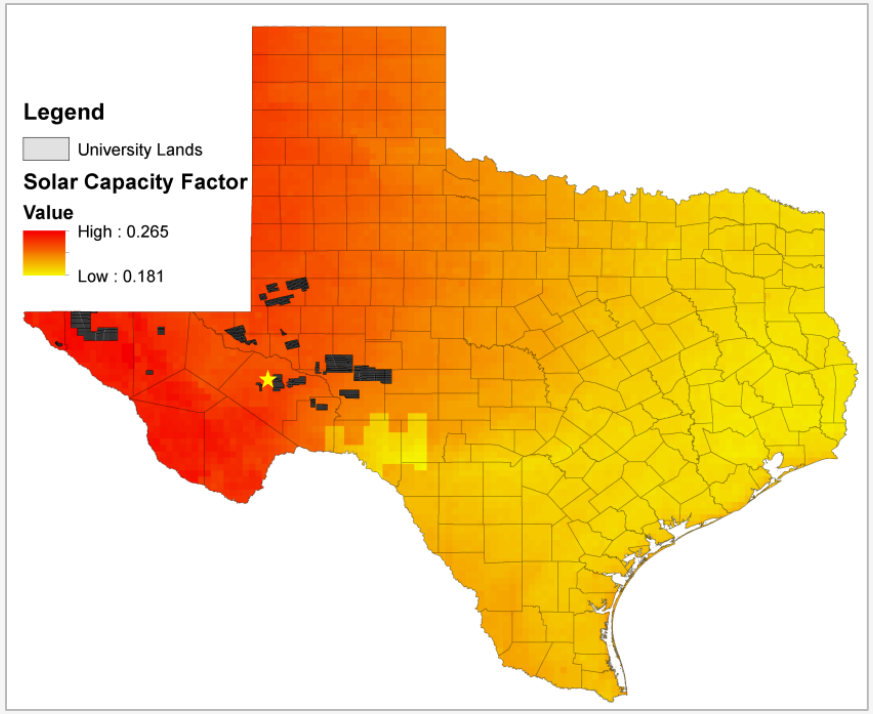
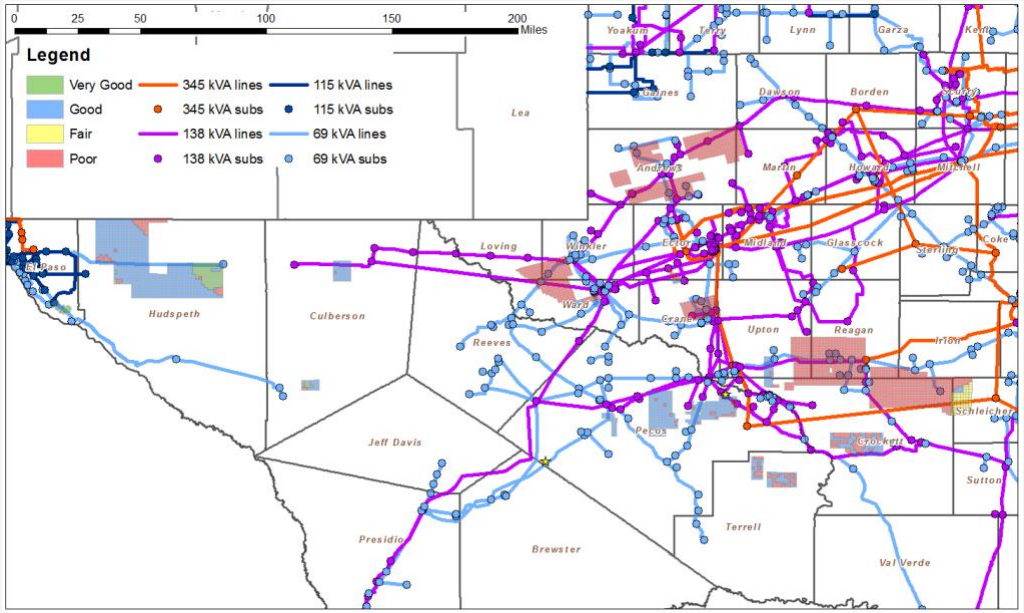
Two Key Factors in Solar: Irradiance and Transmission Availability





UL's Renewables Leasing Approach

- Sites are "best use" of land
- Good revenue *and* carbon offset potential
- Proprietary UL solar and wind lease forms
  - Very long-term contracts – 30, 40, 50+ years
  - Leases have a ~3 year "development period" in which the solar/wind company performs due diligence activities and decides if they actually will build the project
  - Cohabitation with oil and gas development required in lease
    - Solar contract is surface + 500 feet down, which allows for future Hz drilling below panels. Space can also be left between panels to allow for drilling
    - Wind infrastructure is spread out, which allows for drilling between

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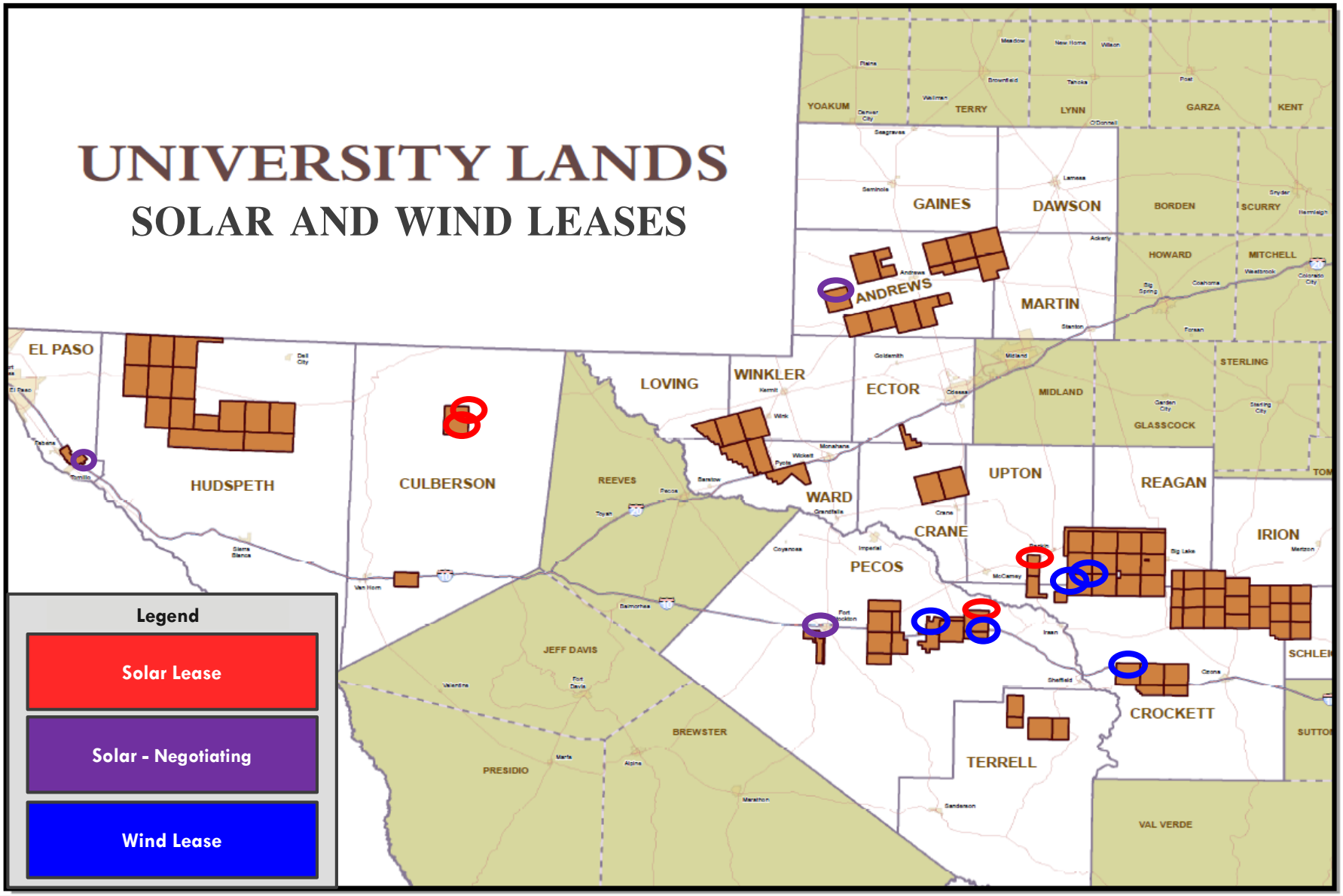
SOLAR AND WIND LEASES



- 70,000 acres of wind and solar energy leases for a total of 1,000 megawatts of power (~700,000 homes)
- 150 megawatts expected to power City of Austin

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The Goal: Coexistence

Photo right: victoriaevclub.com, Imaginea Energy

Photo left: Lorne Matalon, Marfa Public Radio

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Revenue from Renewables

- Revenue *insignificant* compared to oil and gas but *significant* compared to grazing revenue (30x for solar)
- One acre of solar lease has a PV of ~$6,000
  - Solar panels very concentrated, per acre rent is higher
- One acre of wind lease has PV of ~$300/acre
  - Wind lease infrastructure is sparse; per acre rent is lower
- Existing 9 leases expected to generate $250MM over life of leases (PV of $75MM)

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Renewables Outlook & Final Thoughts

Special projects/focus at UL:

- UT El Paso initiative
- Comptroller's Office / Texas Energy Aggregation renewables initiative for state agency power

What's next?

- Recent "land rush" stymied by current lack of transmission access and capacity, with many waiting on ERCOT expansions for growth
- What happens when the tax subsidies expire?
- If public demand continues, growth will continue

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THANK YOU! ANY QUESTIONS?

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