



# Infrastructure

The economic viability of any area is often defined by its basic infrastructure — its water sources, energy supplies and transportation systems. Adequate infrastructure can be the factor that determines whether businesses will locate in certain areas, attract talented workers and provide residents with a high quality of life. The High Plains region, like the rest of the state, faces several challenges in maintaining its infrastructure and expanding it to meet the area's growing needs.

With its wide-open spaces, abundant natural resources, thriving urban sectors and productive rural communities, the High Plains region is well positioned to continue its economic growth and development. A robust infrastructure should continue to provide the High Plains with a solid basis for future economic growth.

## Water

Water is critical to the irrigated crops and livestock that play such an important part in the 41-county High Plains economy, as the people of the High Plains know well. The region has one major river, seven reservoirs for municipal water supplies and an immense underground water source, the Ogallala Aquifer, which lies below parts of eight states. Average annual rainfall in the High

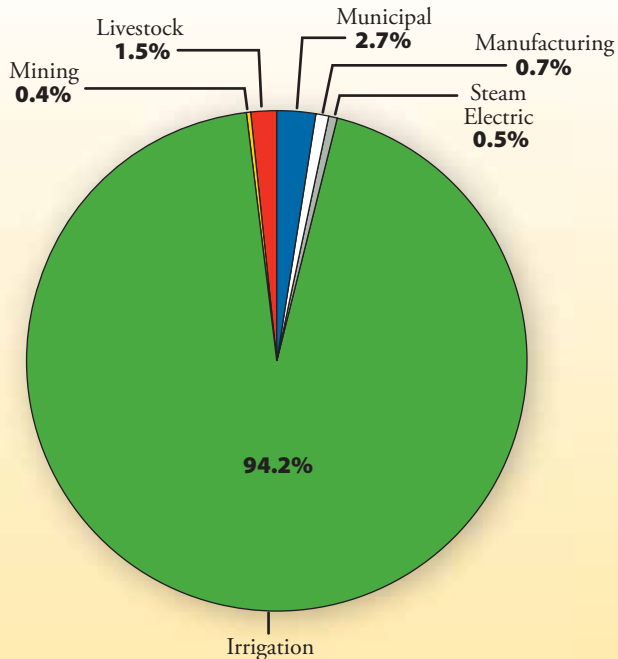
*With its wide-open spaces, abundant natural resources, thriving urban sectors and productive rural communities, the High Plains region is well positioned to continue its economic growth and development.*



Marsha Sharp Freeway in Lubbock, Texas

PHOTO: Lubbock Metropolitan Planning Organization

Exhibit 24

**High Plains Region Total Water Use, 2004**

Source: Texas Water Development Board.

**Department of Energy Facility Driving Growth in Amarillo**

Pantex, located 17 miles outside of Amarillo, maintains the safety of the nation's nuclear arsenal. This private company, which is affiliated with the U.S. Department of Energy, repairs, dismantles and sanitizes nuclear weapons and stores dismantled bomb materials.

Pantex funding for fiscal 2008 totals \$680 million. The facility has 3,600 full-time employees on its 25-square-mile complex.<sup>1</sup> Fiscal 2008 salaries are budgeted at \$266 million, with an additional \$104 million in benefits. The company estimates that the Pantex facility has a \$1 billion annual economic impact on the local economy.<sup>2</sup>

Plains region ranges from 15 to 25 inches, with most areas receiving an average of 19 inches per year. (Statewide rainfall averages range from 10 inches annually in far West Texas to 55 inches in the far Southeast.)<sup>3</sup>

In 2004 (most recent data available), irrigation accounted for 94.2 percent of all water use in the High Plains region (**Exhibit 24**). This water supports the region's enormous agricultural output, including almost half of the state's wheat and more than 60 percent of its cotton and corn. The region also uses water for municipal water systems, livestock, manufacturing, electricity and mining.<sup>4</sup>

The High Plains region falls into two of the Texas Water Development Board's (TWDB's) regions, Panhandle and High Plains. Planning groups for these regions estimate that conservation and a greater use of dryland farming techniques will reduce its need for water in the coming years. TWDB expects the High Plains region's population to increase by about 35.6 percent by 2060 and their municipal water use to increase by just 22.2 percent (**Exhibit 25**).<sup>5</sup>

**Surface Water**

The High Plains region contains portions of four river basins — the Canadian, Red, Brazos and Colorado — but only the Canadian flows continuously within the region. The Canadian River, which bisects the upper Texas Panhandle, provides less than 3 percent of the upper Panhandle's drinking water and almost none to residents of the lower Panhandle.<sup>6</sup> Valuable rainfall in the region collects in thousands of small *playas*, or dry lakes, to supplement the water supplies for livestock and wildlife.

The region also contains 12 reservoirs and lakes (**Exhibit 26**). Five of these are not



## Exhibit 25

### High Plains Actual and Projected Total Water Use by Sector, 2000-2060 (acre-feet)

Sector	2000	2020	2040	2060
Irrigation	5,482,338	5,131,662	4,647,756	4,176,207
Livestock	75,343	138,793	148,332	159,105
Manufacturing	47,771	59,895	66,764	74,068
Mining	19,866	12,652	8,810	7,568
Municipal	166,444	180,597	193,640	203,398
Steam Electric	43,873	51,408	64,119	84,238
<b>Total</b>	<b>5,835,635</b>	<b>5,575,007</b>	<b>5,129,421</b>	<b>4,704,584</b>

Source Texas Water Development Board.

currently used as human water supplies because of their unreliable flow or because they were designed to supplement flows to another reservoir. TWDB expects the seven reservoirs and lakes that do serve as water supplies to yield more than 100,000 acre-feet

of water in 2010. (One acre-foot of water equals 325,851 gallons, roughly the annual consumption of two suburban families.) In all, the 12 reservoirs and lakes have a total conservation storage capacity of more than one million acre-feet.<sup>7</sup>

## Exhibit 26

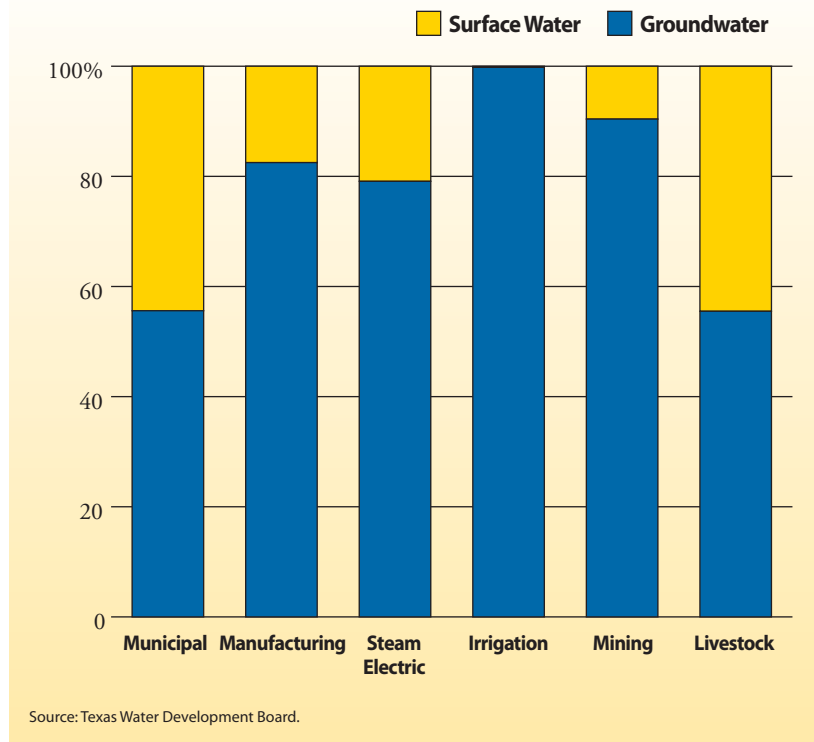
### Major Lakes and Reservoirs in the High Plains Region

Reservoir/ Lake Name	River Basin	Year 2010 projected yield (acre-feet)	Conservation storage capacity (acre-feet)
Alan Henry Reservoir	Brazos	22,500	94,808
Baylor, Lake	Red	0	9,220
Bivins Lake	Red	No water supply function	5,120
Buffalo Lake	Red	No water supply function	18,150
Greenbelt Lake	Red	8,854	59,500
Lower Running Water Draw WS SCS Site 2 Dam	Brazos	No water supply function	5,429
Lower Running Water Draw WS SCS Site 3 Dam	Brazos	No water supply function	8,213
Mackenzie Reservoir	Red	0	46,429
Meredith, Lake	Canadian	69,750	779,556
Palo Duro Reservoir	Canadian	3,958	60,897
Rita Blanca, Lake	Canadian	No water supply function	12,100
White River Lake	Brazos	2,431	29,880
<b>Total</b>		<b>107,493</b>	<b>1,129,302</b>

Note: WS SCS means "Watershed – Soil Conservation Service," referring to the former U.S. Soil Conservation Service (now the U.S. Natural Resources Conservation Service) that built the dams.  
Source: Texas Water Development Board.

Exhibit 27

**High Plains Water Sources, by Sector, 2004**



ers have jurisdiction over their use and development. The Palo Duro River Authority in Hansford and Moore counties oversees water flowing from nearby creeks into the Palo Duro Reservoir in Hansford County. The Canadian River, which flows through New Mexico, Texas and Oklahoma, is governed by an interstate agreement concerning water quality (particularly salinity) and quantities allowed to each state. The Canadian River Municipal Water Authority manages the portion of the river within Texas borders.

**Groundwater**

Until late in the 19th century, the High Plains region’s relative scarcity of surface water slowed its development. Ranching and dryland farming gradually took hold, aided by the arrival of the railroads. Once groundwater wells came into use in the early 1900s, agriculture expanded rapidly; improved technology at mid-century prompted an explosion of irrigation wells throughout the area. Soon, High Plains fields were providing the nation with wheat, sorghum, cotton and corn, forming an economic base that continues (along with beef and oil) to support the region today.<sup>10</sup>

In 2004 (most recent data available), groundwater from aquifers supplied virtually all (99.8 percent) of the water the region used for irrigation (**Exhibit 27**), and 97.6 percent of its total water supplies.<sup>11</sup>

An aquifer is a water-bearing layer of permeable rock, sand or gravel within the earth. The High Plains region overlays portions of six aquifers, two major ones and four minor aquifers (**Exhibits 28 and 29**). TWDB projects that the largest and most important of

North of Amarillo, the Canadian has been dammed to form Lake Meredith, whose waters are mixed with groundwater to supply drinking water to Amarillo, Brownfield, Borger, Lamesa, Levelland, Lubbock, O’Donnell, Pampa, Plainview, Slaton and Tahoka via a 322-mile aqueduct system operated by the Canadian River Municipal Water Authority.<sup>8</sup>

Recent droughts have taken their toll on the region’s surface water sources, despite good rains in 2007. At this writing, Lake Meredith is at its all-time lowest depth of 49.05 feet, containing about 82,000 acre-feet of water, less than 10 percent of its total storage capacity.<sup>9</sup>

Several governmental entities manage the region’s surface water. River authorities for the Canadian, Brazos, Colorado and Red riv-

*The 12 reservoirs and lakes have a total conservation storage capacity of more than one million acre-feet.*



these, the Ogallala, will yield almost 6 million acre-feet of water for Texas in 2010.<sup>12</sup>

The Ogallala Aquifer, which stretches from Texas to Wyoming and South Dakota, holds an enormous amount of water deposited millions of years ago, in layers of varying depth and thickness. Lying above much of the aquifer is a layer of “cap rock” caliche whose resistance to weathering is largely

responsible for the height of the high plains. This cap rock adds another barrier to the limited rainfall recharging the aquifer. According to the U.S. Geological Service, the recharge rate — that is, the rate at which water moves from the surface into the aquifer — in the High Plains region ranges from about two inches down to only 0.024 inches per year.<sup>16</sup> The Ogallala is not considered to

Exhibit 28

**Major Texas Aquifers**

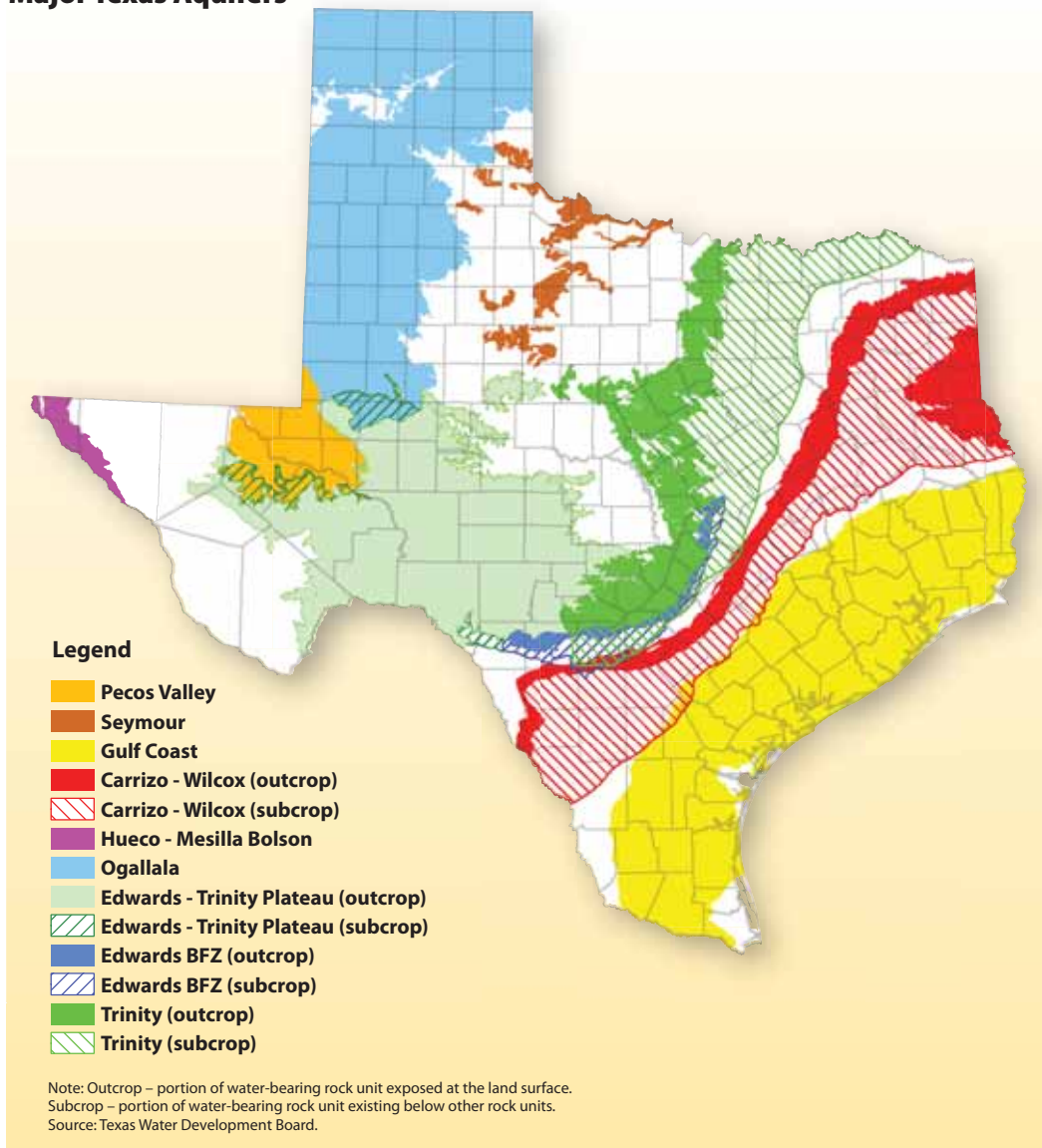


Exhibit 29

**Aquifers in the High Plains Region**

Aquifer Name	Aquifer Type	Availability (acre-feet in 2010)
Ogallala	major	5,968,260
Dockum	minor	406,138
Blaine	minor	315,183
Seymour	major	242,226
Rita Blanca	minor	5,419
Edwards-Trinity (High Plains)	minor	4,160

Source: Texas Water Development Board.

*The High Plains region has nine groundwater conservation districts, including three of the state's largest, as measured by land area.*

be a recharging aquifer, as its rate of withdrawal (use) far exceeds its low recharge rate.

Laws approved by the Texas Legislature in 1999 and 2001 encourage the use of groundwater conservation districts (GCDs or GWCDs), led by locally elected or appointed officials, to manage groundwater sources. The

High Plains region has nine groundwater conservation districts, including three of the state's largest, as measured by land area — the High Plains Underground Water Conservation District No. 1 in the Lubbock area; the Panhandle Groundwater Conservation District (PGCD) in the Amarillo area; and the North Plains Groundwater Conservation District in the northern Panhandle. The High Plains district was the state's first GCD, created in 1951 and covering 10,728 square miles.<sup>17</sup>

GCDs have some options to restrict groundwater pumping to maintain aquifer sustainability. Some, such as High Plains and PGCD, have ad valorem taxing authority, while others, such as the Garza County Underground and Fresh Water Conservation District and the Salt Fork Underground Water Conservation District in Kent County, do not. State law generally allows districts to receive revenue through bond proceeds, fees, investments, grants and loans, depending on the statute creating the district.

State law requires TWDB to plan for water usage through the use of Regional Water Planning Groups (RWPGs), which are made up of local government officials and representatives of business, industry, agriculture,

**Scenic Beauty in the High Plains**

The High Plains region is home to some of the state's outstanding scenic and natural areas, including Caprock Canyons State Park and Palo Duro Canyon State Park.

Caprock Canyons State Park is located southeast of Amarillo in Briscoe, Floyd and Hall counties. Opened in 1982, it is 15,313.6 acres in size, including a 64-mile railway converted into a recreational trail. The park is home to the official Texas State Bison Herd. In fiscal 2006, Caprock Canyons State Park had more than 73,000 non-local visitors who spent more than \$402,000 in the local area. Caprock Canyons State Park had an overall positive economic impact on Briscoe, Floyd and Hall counties of just over \$843,000.<sup>13</sup>

Opened in 1934, Palo Duro Canyon State Park, the "Grand Canyon of Texas," covers 16,402 acres south of Amarillo in Armstrong and Randall counties.<sup>14</sup> In fiscal 2006, Palo Duro Canyon State Park had nearly 229,000 non-local visitors who spent more than \$6.1 million in the local area. Palo Duro Canyon State Park had an overall positive impact on Armstrong and Randall counties of about \$9.4 million.<sup>15</sup>



### National Monuments, Parks, Recreation Areas and Habitats

In addition to state parks, the High Plains region is home to the Alibates Flint Quarries National Monument, located within the Lake Meredith National Recreation Area. Native Americans worked these quarries for many centuries to obtain a high-quality flint for making tools and weapons. Lake Meredith itself was created to supply water and recreational opportunities for the Panhandle region. Alibates Flint Quarries and Lake Meredith are located about 35 miles north of Amarillo in Carson, Hutchinson, Moore and Potter counties.<sup>18</sup>

The High Plains region is also home to the Black Kettle and McClellan Creek national grasslands. The Black Kettle National Grassland contains 31,300 acres, including the 576-acre Lake Marvin near Canadian, Texas. Lake Marvin, also known as Boggy Creek Lake, is an artificial lake constructed in the 1930s on Boggy Creek in East Central Hemphill County by the Panhandle Water Conservation Authority, primarily for soil conservation, flood control, recreation and wildlife habitat. About 1,300 acres of these grasslands are located in Hemphill County, while the remaining 30,000 acres are in Roger Mills County, Oklahoma. The McClellan Creek National Grassland in Gray County, near Pampa, contains 1,449 acres.

In addition, the Buffalo Lake National Wildlife Refuge in Randall County preserves 7,664 acres of shortgrass prairie, riparian, marsh, woodland and cropland habitats.

In 2003, the National Park Service estimated that the national parks, monuments and preserves in the High Plains region generated nearly \$39.6 million in positive economic activity for the surrounding local areas.<sup>19</sup>

The High Plains region has a number of lakes and reservoirs that offer recreational activities including boating and fishing.<sup>20</sup> The

table below shows the recreational lakes and reservoirs in the region, their location and approximate size and average depth.

The region also has several state wildlife management areas (WMAs), including the Playa Lakes Armstrong Unit in Castro County and the Playa Lakes Taylor Lakes Unit in Donley County. These are managed by the Playa Lakes Joint Venture (PLJV), a partnership of federal and state wildlife agencies, conservation groups, private industry and landowners dedicated to conserving bird habitats in the southern Great Plains.

The 640-acre Playa Lakes Armstrong Unit is surrounded by grassland and former farmland that offers wildlife viewing from surrounding roads. It attracts migratory waterfowl and shorebirds during the fall, winter and spring. The Taylor Lakes Unit contains about 214 acres of restored grasslands, 231 acres of pastureland and 85 acres of wetlands near Clarendon, one of the area's first settlements.

Gene Howe WMA includes 5,886 acres located along the Canadian River in the northern rolling plains of Hemphill County. Texas Parks and Wildlife Department purchased Gene Howe, originally part of a family farm, in 1993 to preserve and provide wintering habitat in the playa lakes for migratory waterfowl and shorebirds.<sup>21</sup>

#### Recreational Lakes and Reservoirs High Plains Region

Name	Location	Size	Average/Maximum Depth
Alan Henry Reservoir	45 miles south of Lubbock	2,880 acres	40 feet/100 feet
Baylor Creek Reservoir/ Lake Baylor	12 miles west of Childress	610 acres	15 feet/50 feet
Buffalo Springs Reservoir/ Buffalo Lake	5 miles east of Lubbock	241 acres	15 feet/52 feet
Greenbelt Reservoir/ Greenbelt Lake	60 miles east of Amarillo	1,500 acres	30 feet/84 feet
Mackenzie Reservoir	10 miles northwest of Silverton	896 acres	52 feet/150 feet
McClellan Reservoir	50 miles east of Amarillo	339.2 acres	4 feet/21 feet
Lake Meredith	45 miles northeast of Amarillo	16,411 acres	30 feet/127 feet
Palo Duro Reservoir	10 miles north of Spearman	2,413 acres	46 feet/77 feet
White River Reservoir/ White River Lake	25 miles south of Crosbyton	1,418 acres	11 feet/65 feet

Source: Texas Parks and Wildlife Department.

conservation groups and others. The groups estimate future water use for their areas over the next five decades covered in the State Water Plan. In the plan, water needs are defined as any amount of demand that is not met by the existing water supply. The planning groups develop water management strategies to meet their projected needs; these can include conservation (through more efficient use or cutbacks in usage) as well as new sources such as desalination, new reservoirs or the reuse of water.

Two RWPGs, Llano Estacado in the Lubbock area and the Panhandle group in the Amarillo area, provide this service for most of the High Plains region. The most recent water plans by these two RWPGs both note that groundwater from the Ogallala Aquifer is the region's primary source of water and is being used at a rate that exceeds recharge.

The Llano Estacado group calls this practice "managed depletion." The Panhandle group in the Amarillo area capped the drawdown of the aquifer in their area at 1.25 percent per year of the "current saturated thickness" — the water-bearing underground strata. Because of this practice, both groups estimate that water supplies in the High Plains region will decline by nearly 50 percent by 2060.<sup>22</sup>

Conservation efforts by area farmers are making a dramatic difference in High Plains water use. The groups' projections show a combined 18 percent decrease in overall demand for water between 2010 and 2060, driven by reduced irrigation demand. If all of the proposed water management strategies for the region are implemented, however, the area still anticipates a shortfall by 2060, mostly in the region's southern half.<sup>23</sup>

Trends indicate that agricultural water use inevitably will give way to lower-volume municipal demand, at least in part. Agricultural interests in the region, keenly aware that groundwater may no longer be available in the quantities used in the past, are planting more dryland crops and adopting water efficiency technologies.

Dryland farming techniques, combined with new technology, should sustain the region's traditional economic base. New strategies and new priorities for water supply development and use will continue to challenge all residents of Texas, and particularly those in the High Plains.

## Energy

As with the rest of Texas, oil and natural gas are still quite important to the High Plains economy. The region is home to two of the state's top 25 oil fields, the Anton-Irish Field in Hale County and the Levelland Field in Hockley, Cochran and Terry counties, as well as two of the state's top 25 natural gas fields, the Texas Hugoton Field in Sherman County and the Panhandle West Field in Hartley, Potter, Moore, Hutchinson, Carson, Gray, Wheeler and Collingsworth counties.<sup>24</sup>

The Comptroller's office has determined that oil and natural gas production accounted for more than 7,000 jobs and over \$126 million in earnings for people living in the High Plains in 2006.<sup>25</sup>

The High Plains region also has a high potential for wind energy, one of the world's fastest-growing sources of energy. In 2007, for example, U.S. wind power capacity grew by 43 percent while Texas' rose by 57 percent. Texas is the national leader in installed wind capacity.<sup>26</sup>



According to a 1986 assessment by the Pacific Northwest Laboratory (PNL), a federal research center, Texas ranks second among states for wind potential.<sup>27</sup> More recently, the Alternative Energy Institute (AEI) at West Texas State University updated PNL's wind resource data. They identified three areas in Texas with significant wind power potential: the Panhandle (including part of the High Plains region), the Gulf Coast and specific areas in the Trans-Pecos region. According to AEI, the Panhandle "contain[s] the state's greatest expanse with high quality winds. Well-exposed locations atop the cap rock and hilltops experience particularly attractive wind speeds."<sup>28</sup>

While the High Plains region is among the state's most wind-rich areas, it lacks the transmission lines needed to fully exploit this resource. State legislation approved in 2005, however, may provide greater access to transmission lines and increase wind energy development in the region.

Some landowners, particularly those within the right of way of any prospective transmission lines, are concerned that power lines could cause them to lose some of their land or limit the use of some of their land. Landowners with transmission lines receive a one-time payment based on the value of the land used, while landowners with wind turbines receive ongoing payments.

At the end of 2007, Texas had 4,296 megawatts (MW) of installed wind capacity.<sup>30</sup> In the High Plains region, wind farms currently operating or under construction have an installed capacity of more than 500 megawatts (**Exhibit 30**).<sup>31</sup> The installed wind capacity in the High Plains region can power about 132,000 homes.

### Air Quality

The Texas Commission on Environmental Quality monitors Amarillo's Air Quality Index (AQI) on a daily basis. The city's AQI score typically falls in the "good" range, between 0 and 50. Amarillo has better air quality than most of the other major urban areas around the state, which more typically see AQIs in the "moderate" range, falling between 51 and 100.<sup>29</sup>

The region's wind capacity may well increase in the near future, Shell WindEnergy Inc. and Luminant, a subsidiary of Energy Future Holdings Corporation, recently announced a joint development agreement for a 3,000-megawatt wind project in Briscoe County.<sup>32</sup>

Since 1999, Texas has had a Renewable Portfolio Standard (RPS) that requires electric utilities to obtain some of the state's electricity from renewable sources including solar, wind, biomass, landfill gas, geothermal, hydroelectric, wave and tidal. The 2005 Legislature's Senate Bill 20 significantly increased the state's emphasis on renewable energy, increasing the RPS goal by an additional 5,000 MW of capacity, for a total of 5,880 MW by 2015. S.B. 20 also required the Public Utility Commission of Texas (PUC) to designate Competitive Renewable Energy Zones (CREZs), areas of the state with supplies of renewable energy resources that lack the transmission infrastructure needed to deliver that energy to the customer.

In August 2007, after evaluating about two dozen areas of the state, PUC selected six CREZs as the best sites to develop additional renewable energy capacity, with costs for

### DID YOU KNOW?

*The Texas High Plains contains four river basins — the Canadian, Red, Brazos and Colorado.*

Exhibit 30

**High Plains Region Wind Energy Generating Plants Operating or Under Construction, 2007**

Facility Name	Location	Generation Capacity
Wildorado	Oldham County	161 MW
John Deere Wind I, II, III, IV, V and VI	Hansford County	130 MW
Red Canyon Wind Energy	Borden, Garza and Scurry counties	84 MW
Llano Estacado at White Deer	Carson County	80 MW
Whirlwind Energy Center	Floyd County	60 MW
Aeolus Wind Energy	Hansford County	3 MW
Indian Mesa Wind Farm	Hansford County	3 MW
Llano Estacado at Lubbock	Lubbock County	2 MW
American Windmill Museum	Lubbock County	1 MW
<b>Total</b>	----	<b>524 MW</b>

Sources: American Wind Energy Association and Xcel Energy.

construction of lines covered by all Texas consumers through a surcharge on their utility bills. Two of the six approved CREZs are in the High Plains region.

Several companies have formed partnerships to build transmission lines to the CREZs.<sup>33</sup> One company has filed a proposal with PUC to build an 800-mile transmission loop in the Texas Panhandle to connect 8,000 MW of capacity, mostly from wind power, to the Electric Reliability Council of Texas (ERCOT) electric grid.<sup>34</sup> According to ERCOT, installing a single mile of transmission lines costs approximately \$1.5 million; the 800-mile Panhandle Loop could cost in excess of \$1 billion.<sup>35</sup>

**Utility Rates and Services**

Eight “reliability councils” in the U.S. manage the transfer of electricity across North America and make efforts to ensure

reliable electricity transmission. ERCOT is Texas’ largest reliability council; it manages the flow of 85 percent of the state’s electric load and covers about 75 percent of its land area.<sup>36</sup> Of the 41 counties in the High Plains region, all but six and a portion of a seventh (Childress County, Collingsworth County, Dickens County, Hall County, King County, Motley County and half of Donley County), are outside the ERCOT grid; the remaining counties are part of a separate reliability council, the Southwest Power Pool (SPP).

The High Plains counties that fall within the SPP also are connected to a different electric grid than those in ERCOT. Three interconnected physical electric grids of transmission lines serve North America — the western grid, the eastern grid and ERCOT’s Texas-only grid. With the exception of its ERCOT counties, the High Plains region receives its electricity from the



western grid. This means that most of the region falls outside the partially deregulated retail market most Texans participate in, and therefore their utility rates are subject to PUC approval.

Retail, commercial and industrial customers in the region purchase their electricity from an investor-owned utility, a municipally owned utility or a member-owned cooperative. The largest investor-owned utility

in the region is Xcel Energy, which provides electricity in all but six High Plains counties. The region also has six municipally owned utilities and 13 cooperatives (**Exhibit 31**).

Residential electricity rates charged in the High Plains region vary little from county to county and are some of the lowest in the state. Southwestern Public Service, a subsidiary of Xcel Energy, which serves a large portion of the region, charged an average of

**DID YOU KNOW?**

*The Texas High Plains region has 50 public airports.*

Exhibit 31

**High Plains Region Municipally Owned and Cooperative Utilities**

Municipal Utility	City	Cooperative	County
Brownfield Power & Light	Brownfield	Rita Blanca Electric Cooperative	Dallam, Hansford, Hartley, Hutchinson, Moore, Oldham, Potter, Sherman
City of Floydada	Floydada	Deaf Smith Electric Cooperative	Castro, Deaf Smith, Oldham, Parmer
Lubbock Power & Light System	Lubbock	North Plains Electric Cooperative	Hansford, Hemphill, Ochiltree, Roberts
West Texas Municipal Power Agency	Lubbock	Swisher Electric Cooperative	Armstrong, Briscoe, Castro, Hale, Randall, Swisher
City of Plains	Plains	Greenbelt Electric Cooperative	Armstrong, Childress, Donley, Gray, Hemphill, Randall, Roberts, Wheeler
Tulia Municipal Power & Light	Tulia	Lighthouse Electric Cooperative	Briscoe, Childress, Collingsworth, Crosby, Dickens, Donley, Floyd, Hale, Hall, Motley, Swisher
-	-	Lamb County Electric Cooperative	Bailey, Castro, Cochran, Hale, Hockley, Lamb
-	-	Bailey County Electric Cooperative Association	Bailey, Castro, Cochran, Lamb, Parmer
-	-	Lyntegar Electric Cooperative	Garza, Hockley, Lynn, Terry, Yoakum
-	-	South Plains Electric Coop/ Dickens	Childress, Crosby, Dickens, Floyd, Garza, Hale, Hall, Hockley, King, Lamb, Lubbock, Lynn, Motley
-	-	Tri-County Electric Cooperative	King
-	-	Lea County Electric Cooperative	Chochran, Yoakum
-	-	Big Country Electric Cooperative	Garza

Source: Public Utility Commission of Texas and Texas Electric Cooperatives.

### Hunting is Thriving in the High Plains

Every county in the High Plains region offers some sort of legal hunting, and several counties offer hunting year-round, depending on the type of hunt. In 2007, hunting and fishing enthusiasts in the High Plains region purchased more than 72,000 licenses at a cost of nearly \$2.5 million. All revenues collected from the sale of hunting and fishing licenses go to a dedicated state fund set up for the protection, regulation and conservation of the state’s fish and wildlife.<sup>37</sup>

Fifteen of the region’s counties — Bailey, Cochran, Dallam, Deaf Smith, Hale, Hartley, Hockley, Lamb, Lynn, Lubbock, Oldham, Parmer, Sherman, Terry and Yoakum — place some restrictions on hunting; in general, no white-tailed deer or turkey hunting is allowed in these counties.<sup>38</sup> Beyond these local limitations, the table below shows the types of hunting allowed in the region.

#### Bag Limits and Other Applicable Hunting Regulations, High Plains Region

Animal	Season
White-tailed Deer	<p>Open season lasts from November 3 until January 6. The limit is three deer, with only one buck and no more than two antlerless. Antlerless deer may be hunted without a permit unless antlerless Managed Land Deer Permits (MLDP) are issued.</p> <p>Archery season lasts from September 29 until November 2. The limit is three deer, no more than one buck and no more than two antlerless. Antlerless deer may be hunted without a permit unless antlerless Managed Land Deer Permits (MLDP) were issued.</p> <p>A special youth-only season occurs twice a year on October 27 and 28, and January 19 and 20.</p>
Mule Deer	<p>The season lasts from November 17 until December 2. The limit is two deer with only one buck. Antlerless deer may be taken only by Antlerless Mule Deer Permit or MLDP.</p> <p>Archery season for mule deer lasts from September 29 until November 2. The limit is one buck.</p>
Squirrel	Squirrel season is open year-round with no limit.
Rabbit	Rabbit season is open year-round with no limit.
Turkey	<p>November 3 – January 6. The annual bag limit for Rio Grande and Eastern turkey, in the aggregate, is four, no more than one of which may be an Eastern turkey.</p> <p>Archery only: September 29 – November 2.</p> <p>Special youth-only season: March 22-23 and May 17-18.</p>
Pheasant	December 1 – December 30 with no limit.
Quail	October 27 – February 24. Daily bag limit: 15; possession limit: 45.
Dove	September 1 – October 30 with no limit.

Source: Texas Parks and Wildlife Department.



8.4 cents per kWh for residential electricity in January 2008. Lubbock Power and Light reported similar rates as Xcel Energy.<sup>39</sup>

The High Plains region uses a number of fuel sources to generate electricity. SPP reports that in 2007, the majority of its electricity was generated from coal and natural gas (**Exhibit 32**).<sup>40</sup>

## Transportation

Transportation is essential to the economic health of the High Plains region. The region's roads are its primary way of moving its agricultural and energy products to urban markets. The region's road network is vast, but roadway concerns and spending in the region center on a select few roads, including:

- Interstate Highway 40, running east to west through the Panhandle;
- Interstate Highway 27/U.S. Highway 87, running north to south through the Panhandle;
- the intersection of Interstate Highways 40 and 27 in Potter and Randall counties; and
- the Marsha Sharp Freeway/U.S. Highway 82, running east and west through the city of Lubbock.<sup>41</sup>

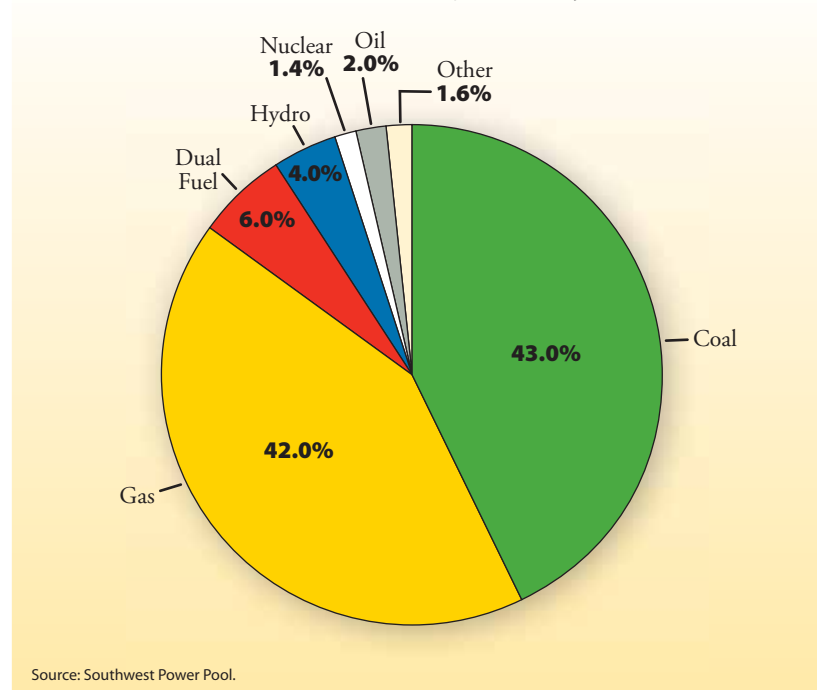
## Highways

TxDOT builds and maintains the Texas state highway system through local offices and contractors located around the state. The High Plains region is served by TxDOT district offices in Amarillo, Lubbock and Childress.

The High Plains region has 10,468 centerline miles (miles traveled in a single direction regardless of the number of lanes) and 23,880 total lane miles of state highways. The region has 758,073 registered vehicles that travel

Exhibit 32

### Southwest Power Pool Generating Capacity



more than 19.8 million miles daily.<sup>42</sup> The state as a whole contains 79,696 centerline miles, 190,764 total lane miles and over 20 million registered vehicles that travel nearly 477.8 million miles each day (**Exhibit 33**).

Road construction, maintenance and engineering for state, local and private entities accounted for over 5,000 jobs and over \$184 million in earnings in 2006 for people in the High Plains region.<sup>43</sup>

## Trade Corridor

To better connect the region with its markets, and encourage much-needed economic development, many area community leaders as well as the Texas Department of Transportation (TxDOT) support the creation of a Ports-To-Plains Trade Corridor (**Exhibit 34**). The corridor is a multi-state effort to connect

Exhibit 33

**Highway Miles, Vehicle Miles Driven and Registered Vehicles, High Plains Region, 2006**

County Name	Centerline Miles	Lane Miles	Daily Vehicle Miles	Registered Vehicles
Armstrong	153	378	312,974	2,635
Bailey	225	490	226,893	6,708
Briscoe	162	326	58,433	2,153
Carson	314	776	817,864	6,835
Castro	261	534	285,056	7,688
Childress	210	477	331,992	6,128
Cochran	232	468	100,172	3,070
Collingsworth	218	446	99,636	3,238
Crosby	253	569	213,435	5,861
Dallam	297	609	297,860	6,146
Deaf Smith	273	603	380,834	18,011
Dickens	202	469	106,269	3,041
Donley	186	455	505,163	3,641
Floyd	324	703	196,855	7,203
Garza	184	460	410,575	4,637
Gray	338	773	696,619	24,411
Hale	460	1,057	868,538	29,239
Hall	210	460	226,301	3,338
Hansford	261	525	125,207	6,212
Hartley	253	540	300,480	5,360
Hemphill	183	386	171,677	5,621
Hockley	336	752	624,443	21,343
Hutchinson	207	474	338,140	25,828
King	93	199	77,966	521
Lamb	362	805	471,190	13,708
Lipscomb	197	411	94,619	3,353
Lubbock	636	1,713	3,580,033	223,699
Lynn	319	710	354,609	5,928
Moore	200	467	441,017	19,737
Motley	165	331	60,897	1,642
Ochiltree	212	430	238,925	12,035
Oldham	179	473	590,735	2,567
Parmer	254	614	411,777	9,777
Potter	301	886	2,615,362	101,842
Randall	360	901	1,296,178	116,793
Roberts	120	241	79,138	1,190
Sherman	195	429	207,696	2,788
Swisher	350	806	424,295	6,400
Terry	276	630	433,260	12,509
Wheeler	298	672	535,371	6,443
Yoakum	208	431	232,086	8,794
<b>High Plains Total</b>	<b>10,468</b>	<b>23,880</b>	<b>19,840,570</b>	<b>758,073</b>
<b>Statewide Total</b>	<b>79,696</b>	<b>190,764</b>	<b>477,769,968</b>	<b>20,084,036</b>

Source: Texas Department of Transportation.



the inland “port” of Laredo, Texas, to Denver, Colorado, and other locations in the Great Plains. In the High Plains region, Interstate Highway 27/U.S. Highway 87 would form an integral part of the trade corridor.

The Ports-To-Plains Trade Corridor is different from other trade corridors proposed in Texas and elsewhere in that it probably would not be tolled nor involve the construction of any new roads, but instead would improve and expand existing roads and rights of way.

Texas is supporting the corridor with \$40 million worth of four-lane expansion projects now under construction. An additional \$275 million has been earmarked for expansion projects through 2014. In addition, TxDOT has pledged another \$458 million

through 2014 to build reliever routes (routes around congested areas) along the corridor.<sup>44</sup>

According to a 2004 Corridor Development Management Plan prepared jointly by TxDOT and the transportation departments of Colorado, New Mexico and Oklahoma, the Ports-To-Plains Trade Corridor would generate 43,000 jobs with a total income of \$4.5 billion in communities along the corridor from 2006 through 2030. The report also estimated that Texas could see about 17,000 new jobs in manufacturing and transportation/warehousing between 2006 and 2030 due to the corridor. These new jobs, along with increased tourism in the area, were estimated to generate just under \$2.2 billion in positive economic impacts in Texas.<sup>46</sup>

### Texas Prairie Rivers Region Bringing Tourism and Money to the High Plains

A group of ranchers, business owners and concerned citizens in the eastern counties of the Panhandle created a plan to bring tourism and economic development projects to their part of the state. As part of this effort, they formed the Texas Prairie Rivers Region (TPRR), a nonprofit organization representing 15 counties in the region.

TPRR has pursued and received grants from federal and state agencies, private landowners, foundations and local governments, and is a group of more than 500 organizations who work on projects to benefit local businesses and landowners by promoting the area’s natural resources and culture.

Among other projects, TPRR has worked with the U.S. Fish and Wildlife Service and the Texas Parks and Wildlife Department to create a guide for tourists interested in the diverse landscape and wildlife of the prairies and plains. Nature tourists, particularly bird-watchers, come from around the world to see the mating rituals of the lesser prairie chicken on a farm east of Canadian, and to Lipscomb to see flocks of wild turkeys gathering at a watering hole.

TPRR also has developed conservation and education programs to promote the region and its rural communities. These programs have brought millions of tourism dollars to the region. The group has secured \$5 million in grants since 2001.<sup>45</sup>

Exhibit 34

### Ports-To-Plains Trade Corridor - High Plains Region



Source: Ports-To-Plains Trade Corridor.



## Public Transportation

In the city of Amarillo, the Amarillo City Transit System (ACTS) provides public transportation and special transit services; Citibus provides these services in the city of Lubbock. Outside these urban areas, all transit services for the public in the region are provided by the Caprock Community Action Agency (Captrans), the Panhandle Transit District (PTD) and the South Plains Area Rural Transportation Assistance Network (SPARTAN) (**Exhibit 35**).<sup>47</sup>

## Railways

Seven companies, four local railroads and three switching and terminal railroads (small operations primarily involved in transferring goods between major railroads) are headquartered in the High Plains region, controlling 300 miles of railway track in the area.<sup>48</sup> In addition, Union Pacific Railroad Company and Burlington Northern Santa Fe operate tracks in the High Plains, the majority of them around the cities of Lubbock and Amarillo (**Exhibit 36**).

Railways play an important role in transporting agricultural goods and are especially important in the High Plains region. Rail is typically the least-expensive mode of transporting agricultural products; if rail is not available, agricultural producers usually transport their goods by truck to the nearest rail terminal. An expanded rail system could greatly benefit the High Plains region. There are no current planned improvements to the rail system in the High Plains region, but state and local officials are currently studying the economic viability and need of these improvements.<sup>50</sup>

Exhibit 35

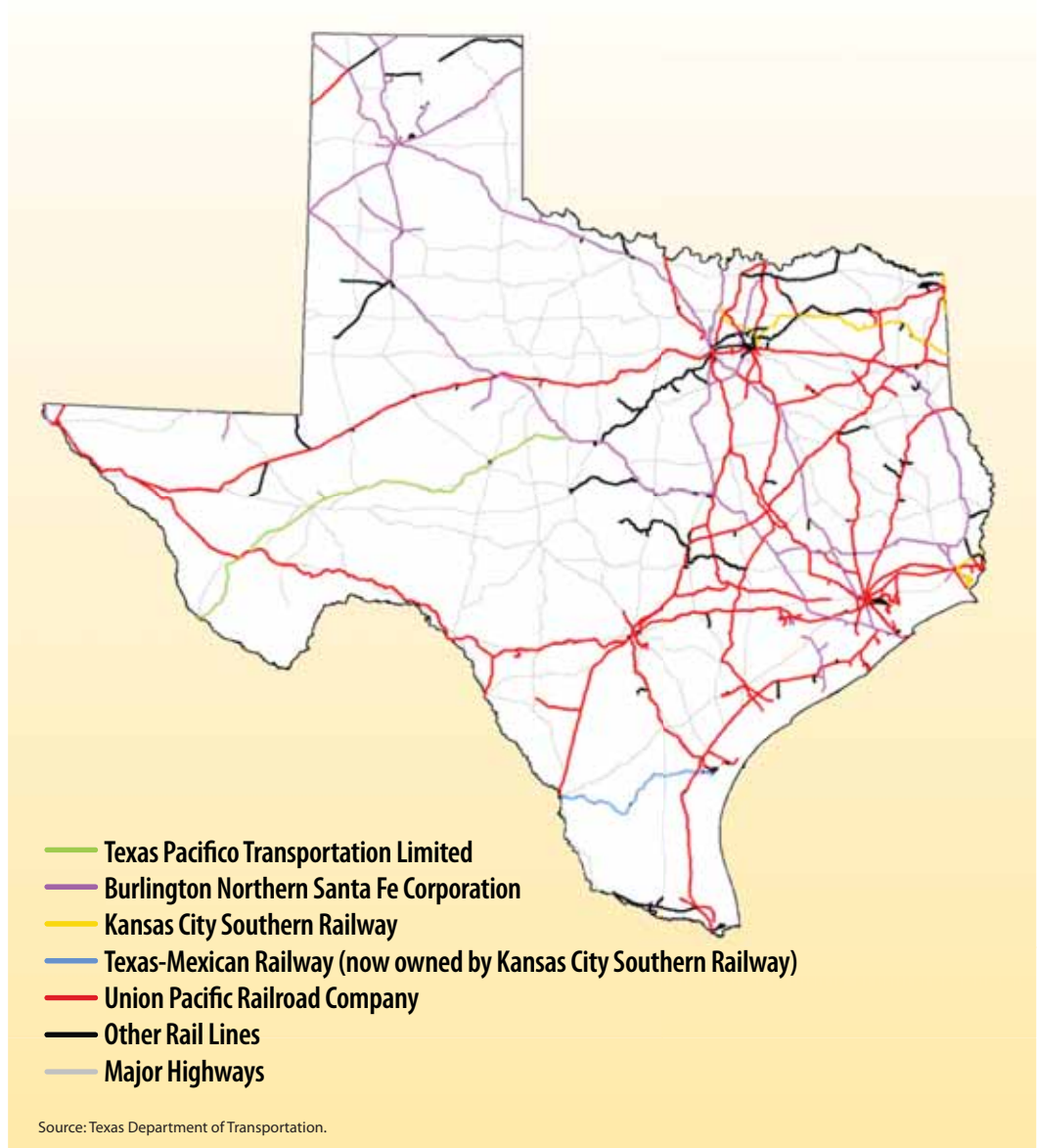
### Public Transportation Resources, High Plains Region

County Name	Public Transit Authorities
Armstrong	PTD
Bailey	SPARTAN
Briscoe	PTD
Carson	PTD
Castro	PTD
Childress	PTD
Cochran	SPARTAN
Collingsworth	PTD
Crosby	Captrans
Dallam	PTD
Deaf Smith	PTD
Dickens	Captrans
Donley	PTD
Floyd	Captrans
Garza	SPARTAN
Gray	PTD
Hale	Captrans
Hall	PTD
Hansford	PTD
Hartley	PTD
Hemphill	PTD
Hockley	SPARTAN
Hutchinson	PTD
King	Captrans
Lamb	SPARTAN
Lipscomb	PTD
Lubbock	SPARTAN and Citibus
Lynn	SPARTAN
Moore	PTD
Motley	Captrans
Ochiltree	PTD
Oldham	PTD
Parmer	PTD
Potter	ACTS and PTD
Randall	ACTS and PTD
Roberts	PTD
Sherman	PTD
Swisher	PTD
Terry	SPARTAN
Wheeler	PTD
Yoakum	SPARTAN

Source: American Public Transportation Association.

Exhibit 36

**Texas Rail Lines and Major Highways**



**Top O' Texas Rodeo**

Pampa, located 60 miles northeast of Amarillo, has hosted the Top O' Texas Rodeo for 61 years. For three days in August, at least 3,000 people watch the rodeo and participate in the activities planned around its performances. Contestants and performers come from as far away as Montana. Entire families come for the week to participate in the Youth Rodeo and the Kid Pony Show. The community supports the rodeo by hosting a free barbecue dinner on Thursday night, a parade on Saturday and a Miss Rodeo Pageant on Saturday night.<sup>49</sup>



## Airports

The High Plains region contains 50 public airports, including four in the Amarillo area and three in Lubbock County.<sup>51</sup>

Lubbock Preston Smith International Airport is the region's busiest, with 564,799 passenger boardings in 2006, up 2.3 percent from 552,023 boardings in 2005.<sup>52</sup> The airport had more than 87,000 takeoffs and landings in 2006, including air carriers, air taxis, civil flights and military flights.<sup>53</sup> This airport is served by American Eagle, Continental Express and Southwest Airlines.<sup>54</sup>

Rick Husband Amarillo International Airport is the region's second busiest, with 446,926 boardings in 2006, up by just 0.1 percent from 2005's 446,395 boardings.<sup>55</sup> This airport is served by American Eagle, Continental Express, Great Lakes Aviation and Southwest Airlines.<sup>56</sup>

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