Hood County, Texas
Fifth Annual Path Forward Report

Ozone Advance Program

March 7, 2019

Hood County Clean Air Coalition

www.hoodcountycleanair.com

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1.0 Introduction

Hood County joined the Ozone Advance Program in April 2012. Ozone Advance is an expansion of the U.S. Environmental Protection Agency's (EPA's) cooperative efforts with states, tribes, and local governments to encourage actions that result in reduced ozone formative emissions to enable continued compliance in meeting the National Ambient Air Quality Standard (NAAQS) for ozone. This program targets areas that have ambient ozone levels close to the NAAQS and are at risk of violating the standard. It acts to assist in efforts to reduce air pollution, ensure continued healthy air quality levels, avoid NAAQS violations, and increase public awareness regarding ground level ozone as an air pollutant. As part of the Ozone Advance program a "path forward letter" is submitted to the EPA program contact that describes measures and/or programs that the area will implement to try to meet the program goals along with a schedule for implementation of each (EPA, 2012a).

Ozone is a gas formed when three atoms of oxygen combine. This action may occur in the upper atmosphere as well as at ground level. In the upper atmosphere, about 6-30 miles above the Earth's surface, ozone forms a protective layer that shields the Earth from ultraviolet rays from the sun. At ground level, ozone is a secondary pollutant meaning that it is not directly emitted into the air, but is formed by a chemical reaction between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight, thus NOx and VOC are called "formative" emissions or "precursors" to ozone formation. Major sources of the emissions of either NOx or VOC, or both, are industrial facilities, electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents. Exposure to certain levels of ozone can cause health problems including respiratory problems like coughs and respiratory irritation as well as aggravating asthma symptoms (TCEQ, 2014a).

Hood County is a small rural county southwest of Fort Worth with an economy based on retail, retirees, tourism, and very little industrial or manufacturing professions. In April 2018, the EPA designated Hood County as attainment for the 2015 ozone NAAQS. Hood County has continued to take the initiative to address the air quality situation and, as part of its efforts to improve air quality, Hood County continues to partner with EPA through the Ozone Advance Program.

As part of participation in EPA's Ozone Advance Program, areas are asked to submit annual updates of measures and programs in their Path Forward Documents. These documents are intended to fully describe the measures and/or programs the area will implement and provide a schedule for the implementation of each one (EPA, 2012a). This document is the fifth annual update on the measures and programs discussed in the Path Forward for Hood County, Texas.

The programs and measures included in the Hood County Path Forward to aid in reduction of the formative emissions of ozone are focused on voluntary efforts for fuel and energy savings, locally enforced ordinances, and educational efforts. Hood County is ensuring actions are taken to improve air quality in the region, provide healthy air for its citizens, maintain healthy economic growth, and show leadership in environmental sustainability.

2.0 Background

Hood County is located in North Texas and encompasses 425 square miles. It is bordered by the counties of Erath, Somervell, Johnson, Parker, and Palo Pinto. The main trade center and county seat is the town of Granbury, Texas. Hood County's population for 2018 is estimated at 58,273 – a 13.9% increase over the 2010 Census. Granbury is the largest town in Hood County followed by the smaller communities of Tolar, Cresson, and Lipan. Currently estimates are that 24.5% of Hood County's population is aged 65 and older. From 2000 to 2010 more than 50% of the growth of the county was attributed to residents 55 and older (U.S. Census, 2018). Most of the residents who are not retired are employed within the county. Figure 1 indicates the geographic area of Hood County in the north Texas region including urbanized areas. Figure 2 is a map of the county including the county seat of Granbury and smaller communities of Tolar, Cresson, and Lipan.

In October 2015, EPA finalized the 2015 Ozone NAAQS of 70 parts per billion (ppb). The new standard is lower than the previous 2008 Ozone NAAQS of 75 ppb. EPA strengthened the standard to ensure protection of public health and the environment. In December 2017, 120 day letters were sent out by EPA. In the second round of area designations for the 2015 ozone standard, Hood County was designated attainment based on 2014-2016 data when the monitor's design value was 67 parts per billion (ppb).

Figure 1: Hood County location in north Texas region *Data source: NCTCOG, 2013a*

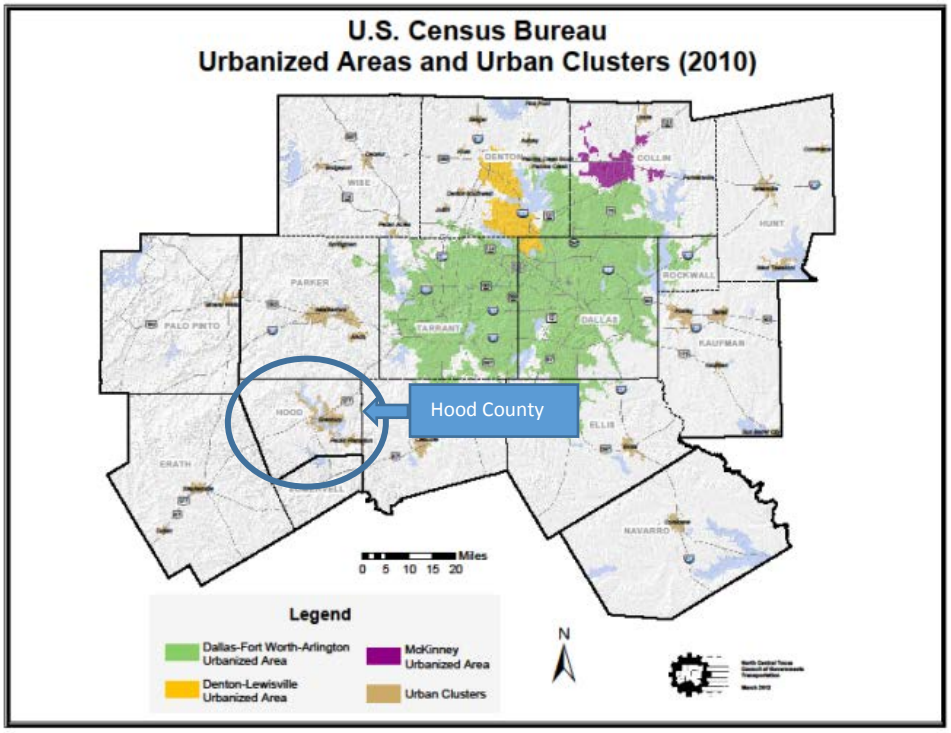
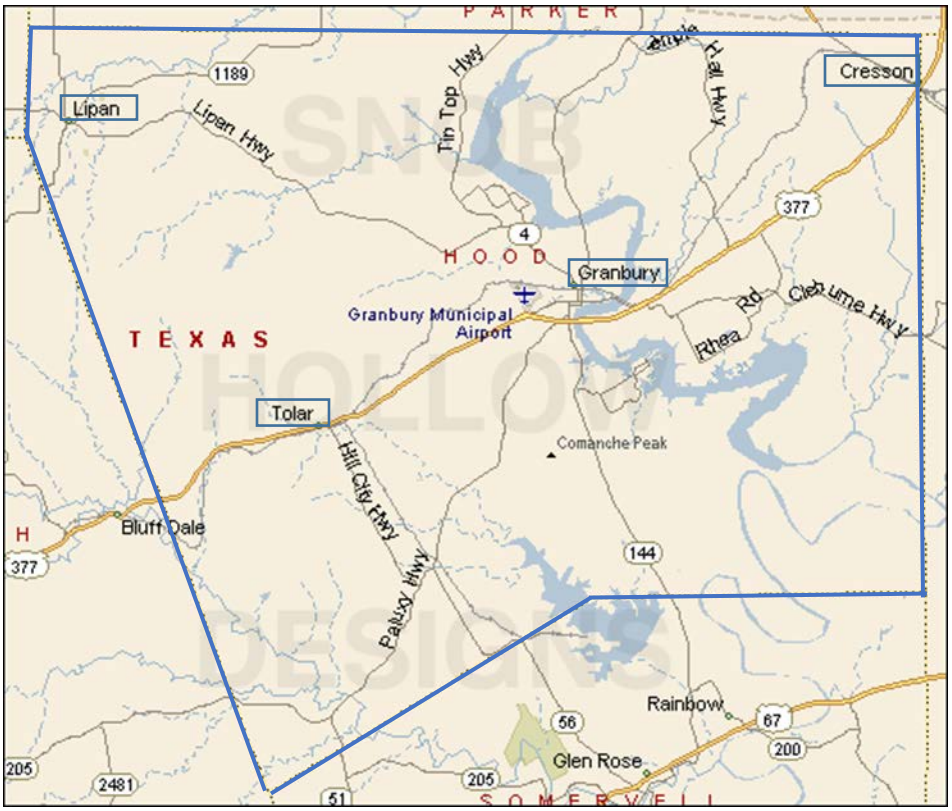


Figure 2. Map of Hood County, Texas *Data Source: County Maps of Texas, 2013*

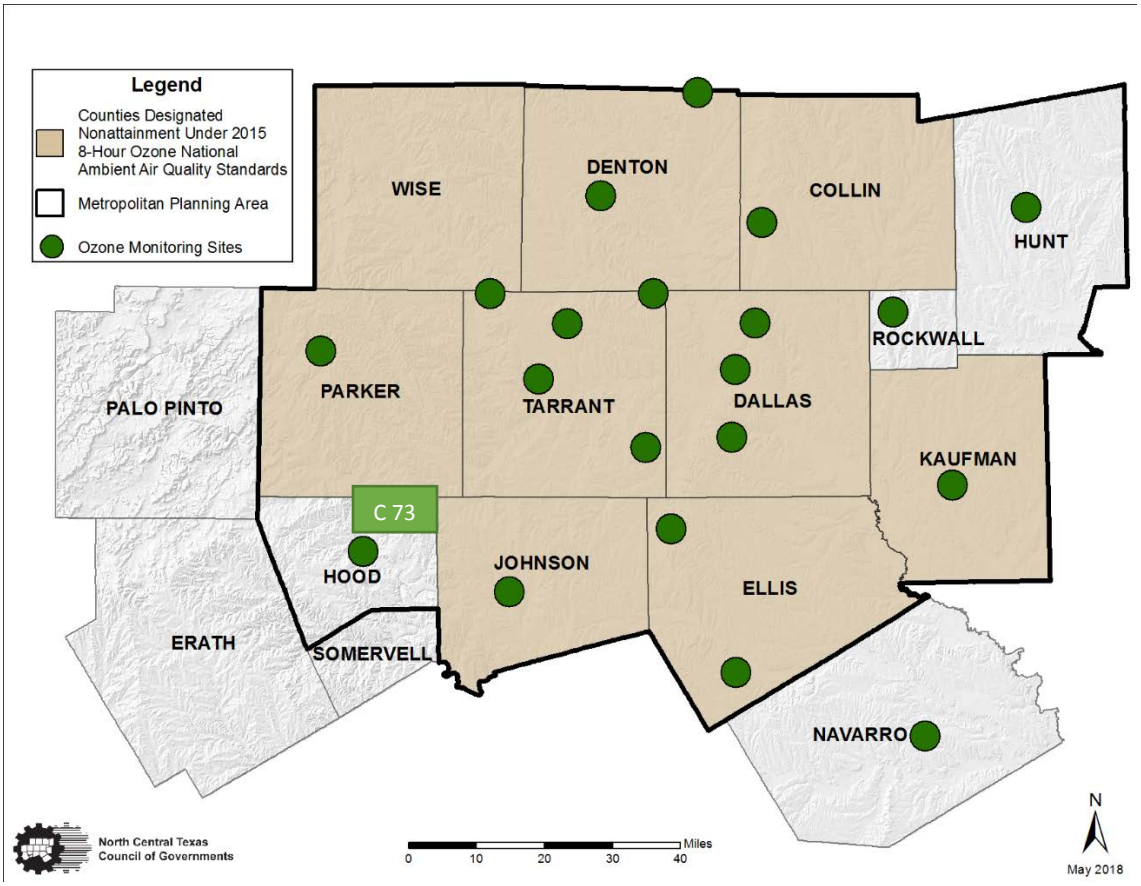


3.0 Current Ozone Data

3.1 Ozone Design Values

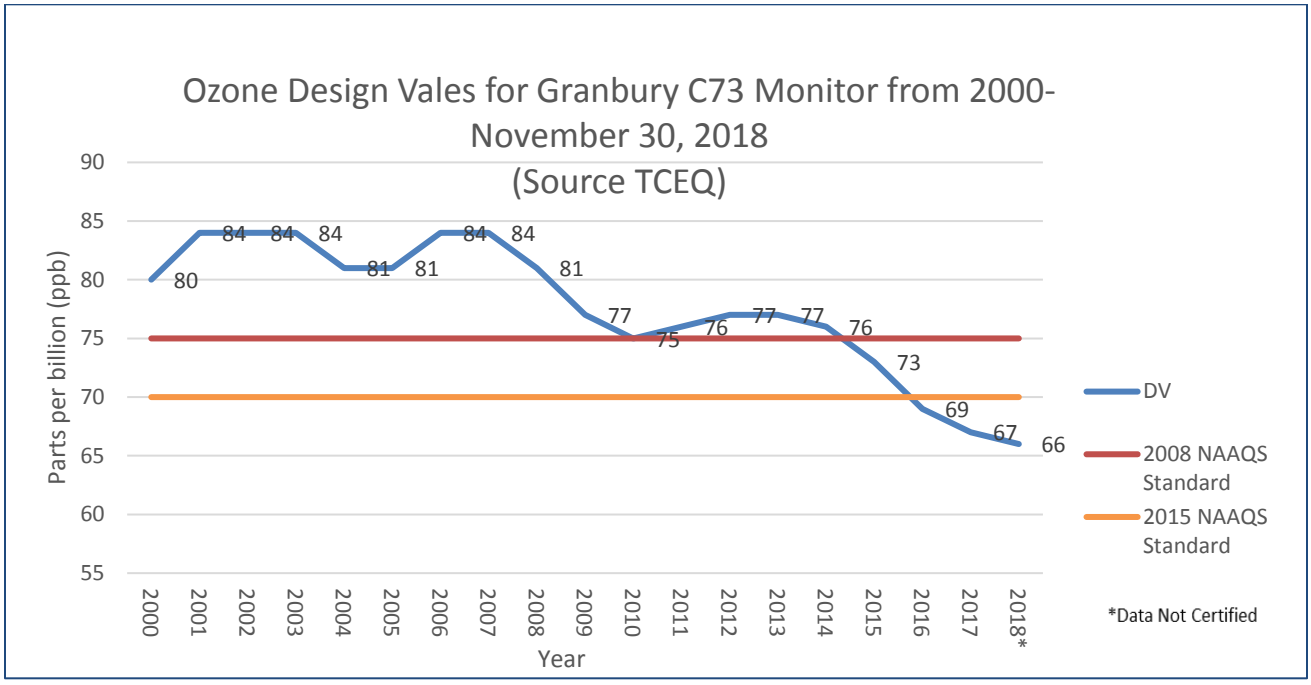
A statistic used to describe the air quality in a location with an air monitor is the Design Value (DV). The DV is used to designate nonattainment areas and measure progress towards meeting NAAQS. For ozone, the 2015 NAAQS is considered to be met when the annual fourth highest daily maximum 8 hour average concentration averaged over three years is 70 ppb or less. The air quality monitor in Hood County, located in Granbury, is a regulatory monitor operated by the Texas Commission on Environmental Quality (TCEQ), and is identified as C73. Figure 3 is a map of regional air monitors with the location of monitor C73 identified. The tan area of the map represents the 2015 Ozone Standard nonattainment area for the DFW region and green circles identify the location of ozone monitors.

Figure 3: Map of Regional Air Quality Monitors including Dallas-Fort Worth 8-Hour Ozone Nonattainment Area *Data Source: NCTCOG, 2018*



The preliminary 2018 DV for the C73 monitor in Granbury dropped to 66 ppb from 67 ppb in 2017 (TCEQ, 2018). Data for the 2018 ozone season will be certified in May 2019. The preliminary design value of 66 ppb reflects the lowest design value associated with the monitor since it was installed and meets the 2008 standard and the new 2015 Ozone NAAQS. Hood County remains committed to working diligently to ensure that it will maintain levels below the NAAQS for ozone. Figure 4 is a graph of Ozone Design Values for the monitor C73 from 2000-2018. This figure provides an indication of trends in ozone concentrations from 2000-2018. The DV had been on a general decline until the years 2011 and 2012, but continued a general decline after 2014. It is hoped that with further implementation of programs and measures described in the Path Forward and reductions in transported emissions, these values will continue to decline.

Figure 4. Ozone Design Values for C73 Monitor in Granbury from 2000-2018.



3.2 Number of Days that Ozone NAAQS Were Exceeded

Historic data regarding number of days that the 2008 75 ppb standard and the 2015 70 ppb standard were exceeded from 2008-2018 are found in Table 1. This table also includes the four maximum values reported for these years. The first max value has been declining over the last

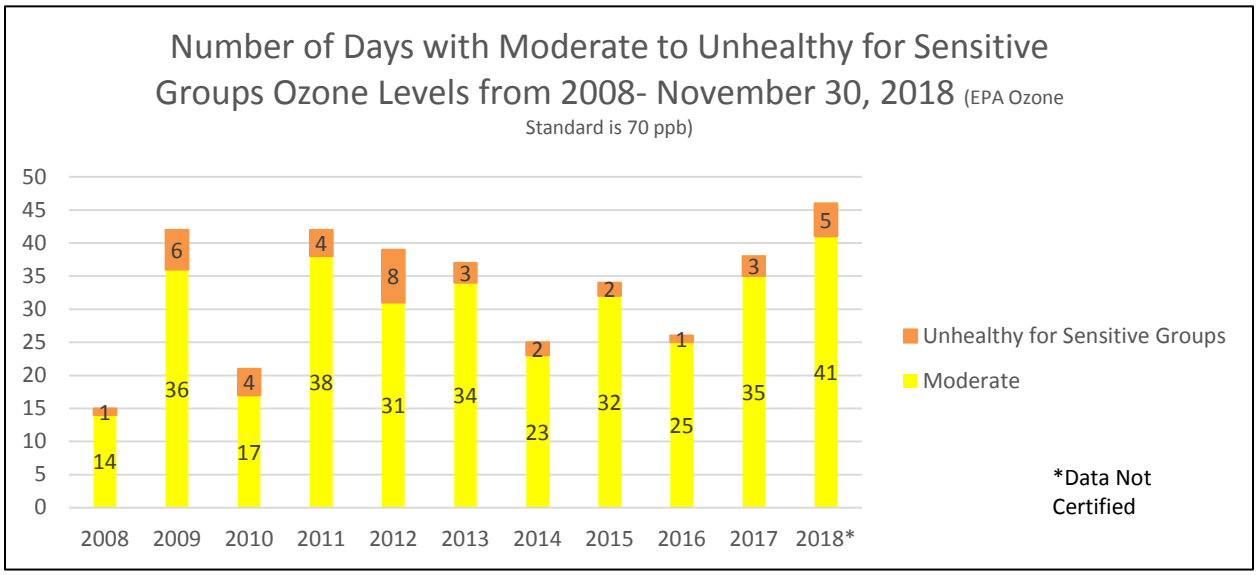
few years. The number of days of exceedance increased to five for 2018, but had previously been in decline over the past few years.

Table 1. Number of days that the NAAQS Was Exceeded and Four Highest Maximum Values for 2008-2015 for Monitor C73. (*Data not certified)
Data Source: TCEQ, 2018e

Year	Number of Days	First Max	Second Max	Third Max	Fourth Max
2018*	5	80	78	74	71
2017	3	81	72	71	66
2016	1	80	63	63	63
2015	2	86	80	75	73
2014	2	91	87	74	73
2013	3	93	83	78	75
2012	8	82	80	80	80
2011	4	82	80	77	76
2010	4	80	80	79	77
2009	6	89	81	80	77
2008	1	78	75	73	73

The EPA Air Quality Index (AQI) is broken down into six categories. These categories are grouped by ozone levels and their associated air quality index values. The five categories and their associated indices are “good” (0-50), “moderate” (51-100), “unhealthy for sensitive groups” (101-150), “unhealthy” (151-200), “very unhealthy” (201-300), and “hazardous” (301-500). The “unhealthy for sensitive groups” category marks the first category with an ozone level above the NAAQS standard of 70 ppb (EPA Air Data, 2016). Figure 5 is a graphic representation for the number of days with “moderate” and “unhealthy for sensitive groups” ozone levels recorded at monitor C73 for the previous AQI associated with the 2008 Ozone Standard and 2015 Ozone Standard. Figure 5 indicates a general decline in the overall number of days with moderate and unhealthy for sensitive groups ozone levels from 2009-2015. While 2015 had an increase in moderate days, the number of days with ozone at the level considered unhealthy for sensitive groups remained at two. While the number of days for each category seems to increase in 2016, 2017, and 2018, this also reflects the change in levels associated with the 70 ppb 2015 ozone standard. The change caused readings that were considered “moderate” under the 2008 standard to be considered “unhealthy for sensitive groups” under the 2015 standard and readings that previously were considered “good” are now considered “moderate” under the 2015 standard.

Figure 5. Number of Days with Moderate and Unhealthy for Sensitive Groups Ozone Levels from 2008-20118 at the Granbury C73 monitor. *Data Source: TCEQ, 2018c*.



3.3 Emission Inventory

The fifth update discussion of the Emission Inventory for Hood County is based on the same data as the last update done at the end of 2017 as this is the latest information available. Through the Texas Commission on Environmental Quality (TCEQ) Rider 7 Grant for near nonattainment areas, several research projects were completed in 2015 including an Emission Inventory Review research project for Hood County. Discussion of those research projects were included in the third annual update. In the Path Forward, the emission inventory data was based on the 2008 NEI for Hood County and in the first annual report, the emission inventory data was based on the 2011 NEI for Hood County. The 2008 and 2011 NEI are annual inventories reported in tons per year (tpy) for emissions, while the 2012 TCEQ Emission Inventory was reported in tons per average ozone season day (tpd) in the Emission Inventory Review (Grant et al., 2015). The annual emissions from the 2008 and 2011 NEI were converted to tons per day for comparison to the TCEQ data from the ENVIRON report.

From the 2012 emission inventory, total NOx emissions were 11.4 tpd and VOC emissions were 78.3 tpd. For anthropogenic sources, NOx emissions were 10.2 tpd and 9.9 tpd for VOC emissions. The emission inventory VOC/NOx ratio for Hood County was calculated to be 23 ppbC/ppb. A VOC/NOx ratio greater than 10 indicates that ozone formation is limited by the amount of NOx available; therefore, Hood County is considered a NOx limited regime and local control strategies should focus on reducing NOx emissions (Grant et al., 2015). The 2012 NOx emissions were comprised of 3.3 tpd for point sources, 2.9 tpd for oil and gas area sources and 0.1 tpd for non- oil and gas area sources, 2.7 tpd for on-road, 1.3 for non- road, and 1.2 tpd for

biogenic sources. VOC emissions were 68.4 tpd for biogenic sources, 5.1 tpd from oil and gas area and 2.2 tpd non-oil and gas area sources, 1.0 tpd for point sources, 0.9 tpd from on-road, and 0.7 tpd for non-road sources (Grant et al., 2015).

2008 and 2011 data indicated that the majority of anthropogenic NOx and VOC emissions were from area sources. In the 2012 emission inventory, area emissions dropped below the point source emission category. The differences in emissions for area sources is due to 2012 emission inventory including data collected for the Barnett Shale survey studies that included detailed, area specific data while the NEI includes data from estimates of oil and gas emissions based on oil and gas activity and equipment configuration data by county (Grant et al., 2015). An increase in emissions from 2011 to 2012 from point and non-road sources is likely due to the difference in reporting as the 2012 inventory is reported in tons per average ozone season day while the 2011 is reported in tons per year. The difference in reporting may be due to differences in equipment activity source data and also seasonal usage profiles. The point source category includes power plants that are used as peaking units – meaning they are more likely to be used during summer ozone season when demand for electricity is high. The non-road category includes pleasure craft that are more likely to be used during summer ozone season. On-road emissions indicate a reduction in emissions likely due to lower emissions in newer vehicles associated with normal fleet turnover (Grant et al., 2015).

The 2014 NEI was released in 2016 (EPA, 2016c). Figure 6 reflects the emissions data comparison of the 2011 NEI, 2012 TCEQ data, and the 2014 NEI. In the 2014 NEI, NOx emissions were lower for almost all categories in comparison to the 2012 TCEQ data and lower for most categories in comparison to the 2011 NEI. 2014 point source emissions were reduced by 39% in comparison to the 2012 data, dropping to 2.03 from 3.30 tpd, and 31% lower than the 2011 NEI at 2.89 tpd. Non-road emissions for 2014 were 38% lower than the 2012 data, dropping to 0.75 from 1.30 tpd, and 11% lower than the 2011 NEI at 0.91 tpd. 2014 on-road emissions were 29% less than the 2012 data, dropping to 1.91 from 2.70 tpd, and 34% less than the 2011 NEI at 2.94 tpd. Area emissions related to oil and gas from 2014 were 6% lower than the 2012 data, dropping to 2.66 from 2.86 tpd, and 32% lower than the 2011 NEI at 4.01 tpd. 2014 area emissions not related to oil and gas, indicated a 53% reduction from 2012 data, dropping to 0.06 from 0.13 tpd, but were a 50% increase from the 2011 NEI, at 0.06 tpd. The numbers related to these area emissions are very low, ranging from 0.04 tons per day in the 2011 NEI to 0.06 in the 2014 NEI. Overall reductions were seen for most categories. Total 2014 NEI anthropogenic emissions were reduced by 28% from 2012 data, dropping to 7.41 from 10.29 tpd and 32% from the 2011 NEI at 10.78 tpd.

Figure 6. Summary of NOx Emission Sources (tpd) for Hood County *Data Source: 2011 NEI v1.0, TCEQ Emission Inventory (Grant et al., 2015), 2014 NEI v1.0*

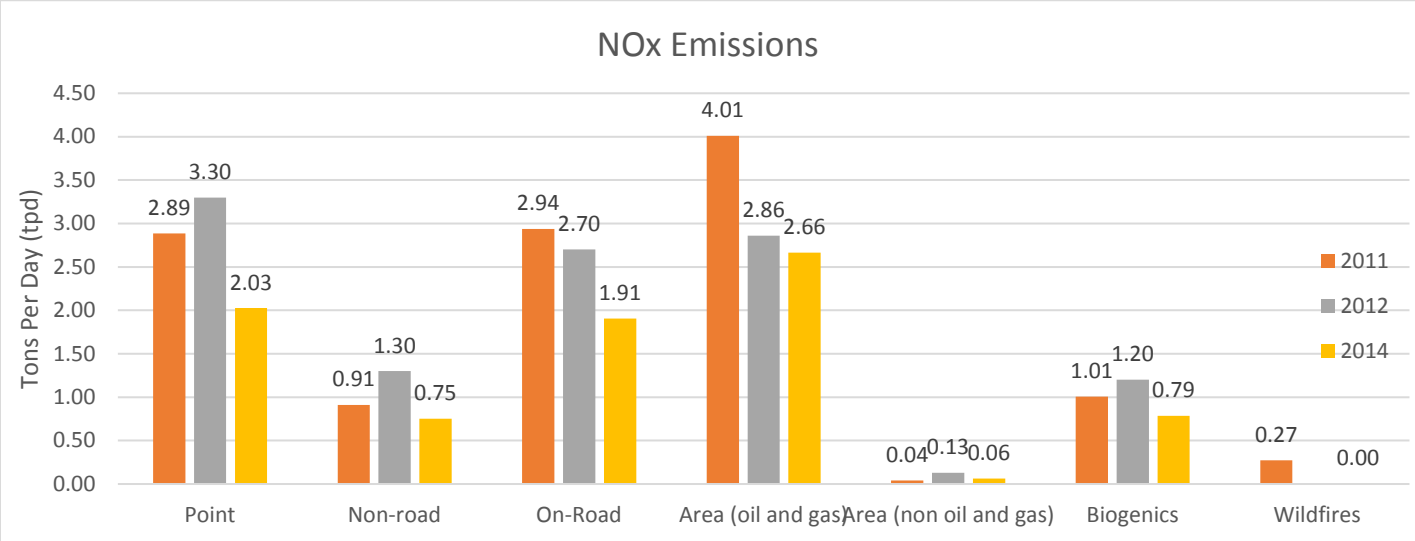
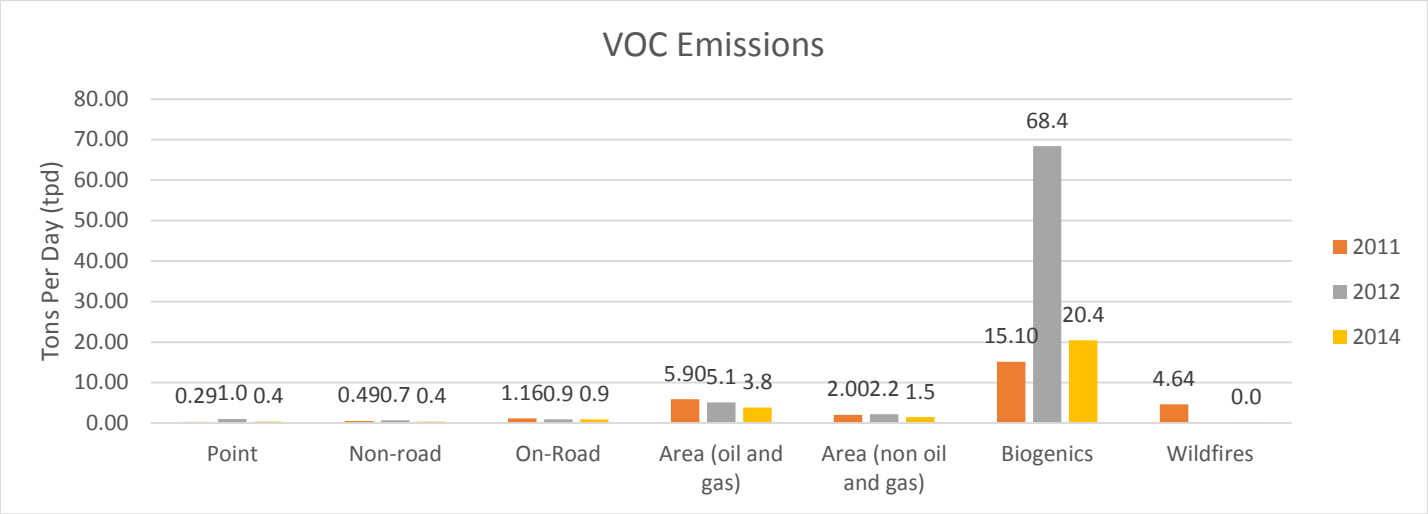


Figure 7 reflects the VOC emissions data comparison of the 2014 NEI with the 2012 TCEQ data and the 2011 NEI. The graph illustrates the VOC emission reductions in most categories. The 2014 point source emissions fell by 64% from the 2012 data, dropping to 0.36 from 1.00 tpd, and showed a slight increase from the 2011 NEI at 0.29 tpd. The values for these emissions are low ranging from 0.3 tpd in the 2011 NEI to 1.0 tpd in the 2012 TCEQ data. The non-road emissions decreased by 43% from 2012 to 2014, dropping to 0.40 from 0.70 tpd, and decreased by 19% between the 2011 and 2014 NEI, dropping to 0.40 from 0.49 tpd. On-road emissions remained about the same from the 2012 data to the 2014 NEI, 0.91 tpd in 2014 and 0.90 tpd in 2012, but showed a decrease from the 2011 NEI by 21%, dropping to 0.91 tpd from 1.16 tpd. 2014 area emissions from oil and gas, showed decreases between the 2012 data and the 2014 NEI of 25%, dropping to 3.82 from 5.11 tpd, and decreases of 35% from the 2011 NEI at 5.90 tpd. 2014 area emissions not related to oil and gas in the 2014 NEI showed a reduction of 32% from the 2012 data, dropping to 1.46 from 2.17 tpd, and a 27% reduction from the 2011 NEI at 2.00 tpd. Overall anthropogenic VOC emissions in the 2014 NEI were 64% less than the 2012 TCEQ data, dropping to 6.95 from 9.88 tpd, and 7% less than the 2011 NEI at 9.85 tpd.

Figure 7. Summary of VOC Emission Sources (tpd) for Hood County *Data Source: 2011 NEI v1.0, TCEQ Emission Inventory (Grant et al., 2015), 2014 NEI v1.0*



In the previous update, there was also a discussion of the research project completed in 2017 that looked at NOx emission trends. That report also indicated an overall reduction of NOx emissions for the DFW area and a smaller decrease in emissions for Hood County.

3.4 Ozone Transport

The reduction in NOx emissions for the DFW area also aid in reduction of ozone for Hood County, as transport is a large contributor to the ozone in Hood County. In the 2016 update, technical work that was done for Hood County included photochemical modeling of a June 2006 ozone episode (Johnson et al., 2015) which included a source apportionment analysis to quantify the relative impacts of local Hood County emissions sources and transported ozone on high ozone days at the Granbury monitor. The photochemical modeling showed ozone due to transport is a dominant contributing factor to ozone in Hood County and in the detailed source apportionment by region for the episode average contribution to daily maximum 8-hour ozone and indicates that, of all areas within Texas, the DFW region had the largest impact on ozone at the Granbury monitor. The modeling indicated that there are four other Texas regions that contribute more ozone to the Granbury (CAMS 73) monitor than local sources including the Waco area, West Texas region, Houston area, and Northeast Texas. Three other Texas regions contribute a smaller portion including Victoria/Corpus Christi, the Austin area, and San Antonio area (Parker, et al., 2015). The details of this report are in the 2016 update. A NOx Emission Trend Report included in the 2017 Update discussion, used satellite retrievals that correlated with the regional NOx emission reductions. Because of the influence of ozone transport from areas outside Hood County, regional control measures will play a vital role in ozone reduction at the Granbury monitor C73. Through participation in various programs sponsored by the NCTCOG including Air North Texas and DFW Clean Cities, Hood County is already active in some

of the regional measures. Information about activities sponsored by Air North Texas and DFW Clean Cities and air quality funding opportunities are forwarded to the stakeholder group. The website, hoodcountycleanair.com, has links to Air North Texas (www.airnorthtexas.org), DFW Clean Cities (www.dfwcleancities.org), and the commuter program – Try Parking It (www.tryparkingit.org).

4.0 Status of Programs

In the early days of the formation of the Hood County Clean Air Coalition, a Clean Air Strategy was developed. This included efforts to limit emissions, zone for appropriate use, develop an Early Compact with EPA, convert city/county fleets to natural gas, convert city/county generators to alternative power sources, and seek voluntary action by all gas operators in the County. Regarding oil and gas emissions that were reported at the time to TCEQ, these were reported as "potential to emit" not actual emissions. In later emission inventories these corrections were made and showed that oil and gas related emissions were significantly less than earlier reported and have been declining since then. As mentioned in the Clean Air Strategy, the City of Granbury adopted an oil and gas zoning authority as a general matter. In regards to developing an Early Compact with EPA, the Hood County Clean Air Coalition took the steps necessary for the County to participate in the EPA Ozone Advance Program and continues to do so. The conversion of diesel fleets to natural gas proposed in the strategy has over time been presented with several obstacles and efforts were made to help with some those obstacles. There was no natural gas fueling infrastructure for the fleets to be able to use after conversion. Funds were used from the Rider 7 to help with installing propane fueling infrastructure, as it was the more affordable option than compressed natural gas. Another obstacle was a lack of locally available servicing of natural gas vehicles. There were successes in finding local service for propane lawn mowers and this led to the expansion of use of propane riding mowers. Efforts have been made to notify fleets of training opportunities for working with natural gas fleets. The conversion to alternative power sources for generators faces the same challenges. Regarding seeking voluntary action by gas operators in the County, the gas operations have slowed dramatically in the County from the peak around 2008. The Clean Air Strategy for the Hood County Clean Air Coalition was a guide for where to start and learn from the challenges that arose from following the strategy.

4.1 2018 Status of Measures and Programs

Table 2. Status of Measures and Programs

Project	Entity	Description	Proposed Schedule in Path Forward	Current Status
Stakeholder Group	Hood County Clean Air Coalition (HCCAC)	1. Holding monthly meetings. 2. Researching and coordinating efforts to address air quality issues in Hood County	Current Strategy	Ongoing
Informational website	Hood County Clean Air Coalition	The Hood County Clean Air Coalition website was developed in May 2012 and expanded with a new domain established in June 2014 - www.hoodcountycleanair.com . The website was further expanded in February 2015.	Current Strategy	Meeting notifications, Ozone Advance Documents, and technical work documents are posted to the website.
Intern	HCCAC	Intern position replaced with an Air Quality Program Manager position in 2014.	Current Strategy	Ongoing
Regional Partnerships	HCCAC	The North Central Texas Council of Governments is a valuable resource	Current Strategy	The Coalition participates in meetings/conference calls with NCTCOG including bimonthly conference calls for Air North Texas (www.airnorthtexas.org) and DFW Clean Cities (www.dfwcleancities.org) meetings. The next meetings are scheduled for January 2019.

Project	Entity	Description	Proposed Schedule in Path Forward	Current Status
Public Awareness Campaign	HCCAC	Public Services Announcements for TV, radio, and print. Participation in Outreach events to increase awareness	Increased participation in NCTCOG programs by June 2013 and increased public service announcements by August 2013.	Three public service announcements began playing on a local radio station for the 2018 ozone season from March through October as was done for the previous ozone seasons. Three public service announcements began playing on the local public television channel, Granbury TV, in March of 2015 and are continued to play each day through 2018. Print PSAs were used in the 2018 ozone season in two local magazines. The Coalition hosted a booth at the Weatherford Campus of Weatherford College for their Earth Day Event in 2018 as was done in previous years. The Clean Air Coalition offered a lawn mower exchange program in 2015 with 3 participants. More advertising was done in 2016 and there has been more interest, but still only six participants. In 2017 the program expanded to include electric chainsaws and string trimmers and was slightly more successful. In the exchange program, Hood County residents were given credit towards purchase of selected electric lawn equipment in exchange for turning in similar working gas lawn equipment that was taken to a recycling center for demolition. In 2017, there were 17 participants. Loss of Rider 7 funding resulted in end of the lawn equipment program for 2018.

Project	Entity	Description	Proposed Schedule in Path Forward	Description
Trip Reductions	1. Hood County, City of Granbury, and numerous area employers 2. City of Granbury 3. City of Granbury	Use of Direct Deposit, support for public transportation and alternative transportation	Current Strategy	1. Continued use of direct deposit by most of the large employers in the County. 2. Researching possible use of Volkswagen Mitigation or other funding to replace the City of Granbury's trolley 3. Bike trail was expanded and three new surrey bicycles were added to the bike rental program in 2015.
Highway Improvement Projects	Texas Department of Transportation	Highway Projects 1. Loop 567 Extension 2. Cresson Rail Overpass	1. Expected to be complete June 2013 2. Project Development Process.	1. Loop 567 extension was completed in June 2013 2. Rail overpass project scheduled to break ground in 2019.

Project	Entity	Description	Proposed Schedule in Path Forward	Current Status
Alternative Fuel Vehicles	HCCAC	Conversion of city and county fleets	Research Conversion of City and County fleets	1. Two propane fueling stations were installed for the City of Granbury, Hood County, and Granbury Independent School District to use in 2015. One is located at the Granbury Service Center and the other is at the Transportation Department of Granbury ISD. 2. Rider 7 Air quality funding was used to aid in expansion of use of propane fueled mowers for City of Granbury, Granbury ISD, Hood County, and the City of Tolar in 2017. 3. Public adoption of electric vehicles indicated by map or registered electric vehicles in the County.
Idling Restrictions	1. Hood County 2. City of Granbury, Tolar, and Cresson and Hood County	Efforts to increase awareness to reduce idling and idling restrictions	Hood County passed a resolution supporting voluntary idling restrictions and the City of Granbury was considering additional idling restrictions	1. A voluntary idling restriction resolution was passed by Hood County in 2012. The county does not have the authority to enforce this, but encourages voluntary actions with the Resolution. Signs providing educational outreach were installed at three county owned parking lots in 2015. 2. Ordinance enforcement is done by the Granbury Police Department for the Idling Restriction Ordinance. Anti-idling signs provide educational outreach. The City of Granbury passed an Idling Restriction Ordinance in October 2013 Anti-idling signs supporting the voluntary measure of the county resolution were installed at four City of Granbury owned parking lots, and one each in Cities of Tolar and Cresson

Project	Entity	Description	Proposed Schedule in Path Forward	Current Status
Travel Systems Management	HCCAC	Traffic flow and signals	August 2013	Signals on Highway 377, the main road through Granbury, are regularly monitored by TxDOT Yellow flashing turn arrows were added in 2018 along Highway 377 to assist in traffic flow.
Review of Air Permits	HCCAC	Monitor air permits.	Current Strategy	Ongoing
Modeling Emission Sources	HCCAC	Technical Projects	Long term Strategy for future consideration	With loss of funding, no new technical or modeling projects were done in 2018.
Review of Efforts at Eagle Ford Shale	HCCAC	Outreach efforts to oil and gas companies	Long term Strategy for future consideration	With the reduction in oil and gas activities in Hood County this is now a reduced priority.

Project	Entity	Description	Proposed Schedule in Path Forward	Current Status
Improved Energy Efficiency	1. United Cooperative Services	1. United Cooperative Services, local utility, completed construction on LEED certified building which includes an energy management education center and a charging station for electric vehicles.	Long term Strategy for future consideration	1. Construction completed
	2. Tri County Cooperative and United Cooperative	2. Tri County Cooperative and United Cooperative both offer free energy audits for customers		2. Ongoing
	3. Granbury ISD	3. Granbury ISD installed a total of 41 led solar parking lot lights over 5 elementary school campuses in 2018		3. Completed

4.2 2018 Discussion of Programs and Measures Status

4.2.1 Outreach and Education

4.2.1.1 Stakeholder Group

One of the first steps in Hood County's air quality efforts was the formation of the stakeholder group – the Hood County Clean Air Coalition (HCCAC). The Coalition continues to meet monthly to discuss the status of current projects and to consider future activities that will address air quality issues in Hood County including technical projects, reviewing of new air permits, and education and outreach to citizens about air quality issues. A current list of members of the coalition and their affiliations is found in Appendix A. The stakeholder group is a continuous and ongoing measure to address ozone in Hood County.

4.2.1.2 Informational Website

The Coalition sponsors an informational website that was originally developed in May 2012. By the end of December 2014, a new expanded website was established with a new domain, www.hoodcountycleanair.com . Additional upgrades were completed in February 2015. The current website includes the Ozone Advance Path Forward Document and Updates, technical work documents, quarterly newsletters produced by the Coalition, meeting agendas, and daily air quality information. It also has links to EPA, the Ozone Advance Program, and Air North Texas, one of the Coalition's regional partnerships. Additional links to other regional partners through the North Central Texas Council of Governments (NCTCOG) including Dallas Fort Worth (DFW) Clean Cities and Try Parking It were added with the website improvement. Links were also added for EPA's Enviroflash website, the City of Granbury, Granbury Chamber of Commerce, Hood County, and Take Care of Texas website for TCEQ. The website is a measure that aids with education and outreach for air quality issues in Hood County. The Rider 7 funding was vetoed in 2017 that funded the website and the Coalition is pursuing other sources of funding to continue this and other air quality efforts.

4.2.1.3 Intern position

The Coalition initially created an intern position to help with maintenance of the group. This position transitioned into a full time Air Quality Program Manager position to manage the various measures and programs being implemented. This position began in 2014 and is funded through the TCEQ Rider 7 Grant. As the Rider 7 Grant was vetoed in June 2017, the Hood

County Clean Air Coalition is researching other funding to continue clean air efforts including maintaining staff to coordinate those efforts.

4.2.1.4 Regional Partnerships

The Coalition continues to benefit from the valuable resources available through regional partnerships with the NCTCOG including Air North Texas and DFW Clean Cities. Hood County partnered with DFW Clean Cities, the Texas Railroad Commission, and ATMOS Energy to provide an educational Forum Event for area fleets (Hood County Natural Gas Forum) in February 2014. Efforts are made to participate in the quarterly meetings of the DFW Clean Cities. The Air Quality Program Manager is scheduled to participate in the January 2018 meeting for DFW Clean Cities. Staff from the Granbury ISD presented at two DFW Clean Cities' events about their use of propane riding mowers. The Try Parking It program seeks to reduce the number of commuter trips through alternative transportation including carpool and vanpool options (Try Parking It, 2014). A link to this program was added to the HCCAC website in 2015. At the end of 2018, the HCCAC was recognized by Air North Texas, the regional campaign for air quality through NCTCOG, with a Partner Award for Outstanding Advertising for the fourth year.

4.2.1.5 Public Awareness Campaign

Increased public awareness of the issue of clean air in the region is an important step. Hood County began the process of increasing public awareness of the importance of taking steps to reduce emissions through the website created for the HCCAC.

In an ongoing effort to help fund air quality projects, information is sent out regarding new regional air quality funding opportunities to Coalition members and are often included in the Granbury Chamber of Commerce announcements and posted to the city's social media sites. The Coalition continued in 2018 with public service announcements (PSAs), again funded through the TCEQ Rider 7 Grant, and began broadcasting at the beginning of the 2018 ozone season on local radio and TV. The three radio PSAs, which began in March, were played at least two times each Saturday through the beginning of August. The scripts for the PSAs came from material produced by Air North Texas and the Federal Highway Administration's "it all adds up" campaign for air quality. Three TV PSAs still broadcast on the public television station, Granbury TV. These PSAs run several times each day and come from material produced by Air North Texas. Two print PSAs from Air North Texas material were used in the 2018 ozone season in two local magazines – the Granbury Showcase and Weatherford Now Magazines.

The Coalition again hosted a booth at the Weatherford Campus of Weatherford College for their Earth Day Event in April 2018. The Coalition also provided an activity for Weatherford College's STEMania event for fourth graders. The HCCAC used the Save Smog City simulation from EPA's airnow.gov website and the participants were given an Air North Texas bookmark with the Air Quality Index on it and a Hood County Clean Air Coalition pencil. The education and public awareness campaigns are ongoing.

The lawn mower program that was implemented in 2015 was continued for the summer of 2016 and 2017 as part of the outreach campaign. In 2017, the program was expanded to include chain saws and string trimmers. Participants received a credit towards the purchase of electric lawn equipment in exchange for turning in gas powered equipment that was recycled. Response was better in 2017 with 17 participants. Education and awareness campaigns have potential to reduce both NOx and VOC (EPA, 2012b). The loss of funding ended this program for 2018 until other funding can be found.

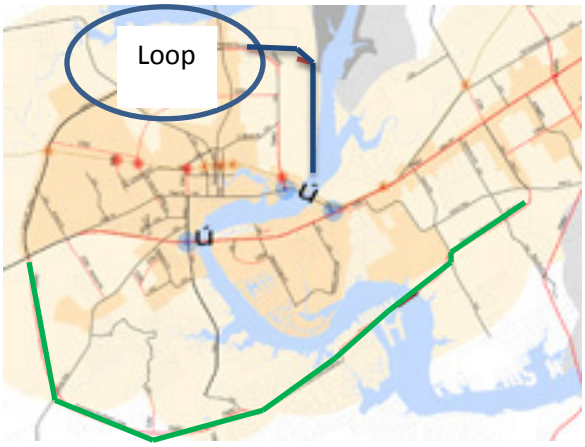
4.2.2 Transportation

4.2.2.1 Highway Improvements

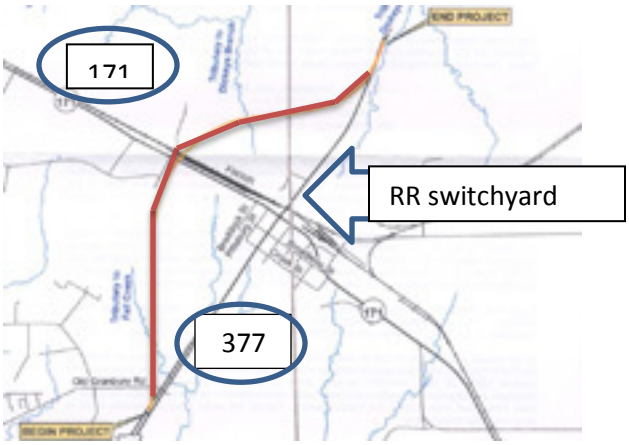
Measures included in the Path Forward addressing highway improvements included the extension of Loop 567 to avoid congestion in the downtown Granbury area. The Loop connected Highway 51 to Pearl Street, bypassing the town square and improving traffic flow in the area. The extension was completed in June 2013 and it has improved traffic flow around the town square especially during high traffic times like early morning and late afternoon. Long term plans include a possible extension to the southern section of Loop 567.

The second highway improvement project discussed in the Path Forward was an overpass over the railroad switchyard and State Highway 171 in Cresson, Texas. The overpass will improve mobility on Highway 377 which has had issues of traffic flow in the area partially due to the rail traffic. Highway 377 is the main route from Granbury to the Dallas-Fort Worth area and is used extensively. Work is expected to begin on this project in 2019 and construction is expected to take approximately 2 years. Figure 8 is an illustration of the two highway improvement projects. These types of travel efficiencies can reduce NOx emissions by 2-5% (EPA, 2012b).

Figure 8. Highway Improvements a.) Granbury Loop 567 extension b.) Cresson project



a.) Current Loop 567 Extension Possible future expansion Loop 567



b.) Cresson Overpass Project

4.2.2.2 Trip Reductions

There were several programs already in place that reduce trips in Hood County. Several of the main employers use direct deposit including those listed in Table 3.

Construction on the expansion of the Moments in Time Hike and Bike Trail began in 2015 and was completed in the spring of 2016. The Moments-In-Time Hike and Bike Trail was built in 2006 and is an eight foot wide concrete trail that runs 2.17 miles from the airport to north of the downtown square with an expansion added 0.2 miles including a bridge. A map of the trail is found in Figure 9. Information about the trail was added to the NCTCOG bike web page for additional advertising. Previously, through the TCEQ Rider 7 Grant, three surrey bicycles were

added to the City of Granbury bike rental program. The surrey bicycles can each carry two adults and two small children.

Table 3. Hood County Employers Using Direct Deposit

Data Source: Lake Granbury Area EDC, 2014

Employer	Number of Employees
Granbury ISD	1000
City of Granbury	170
Hood County	355
Wal-Mart	417
H.E.B.	200
Kroger	100
Lowes	150
Home Depot	115
Propel	135

Figure 9. Map of Moments-In-Time Hike and Bike Trail

Existing trail ——— Trail expansion ———

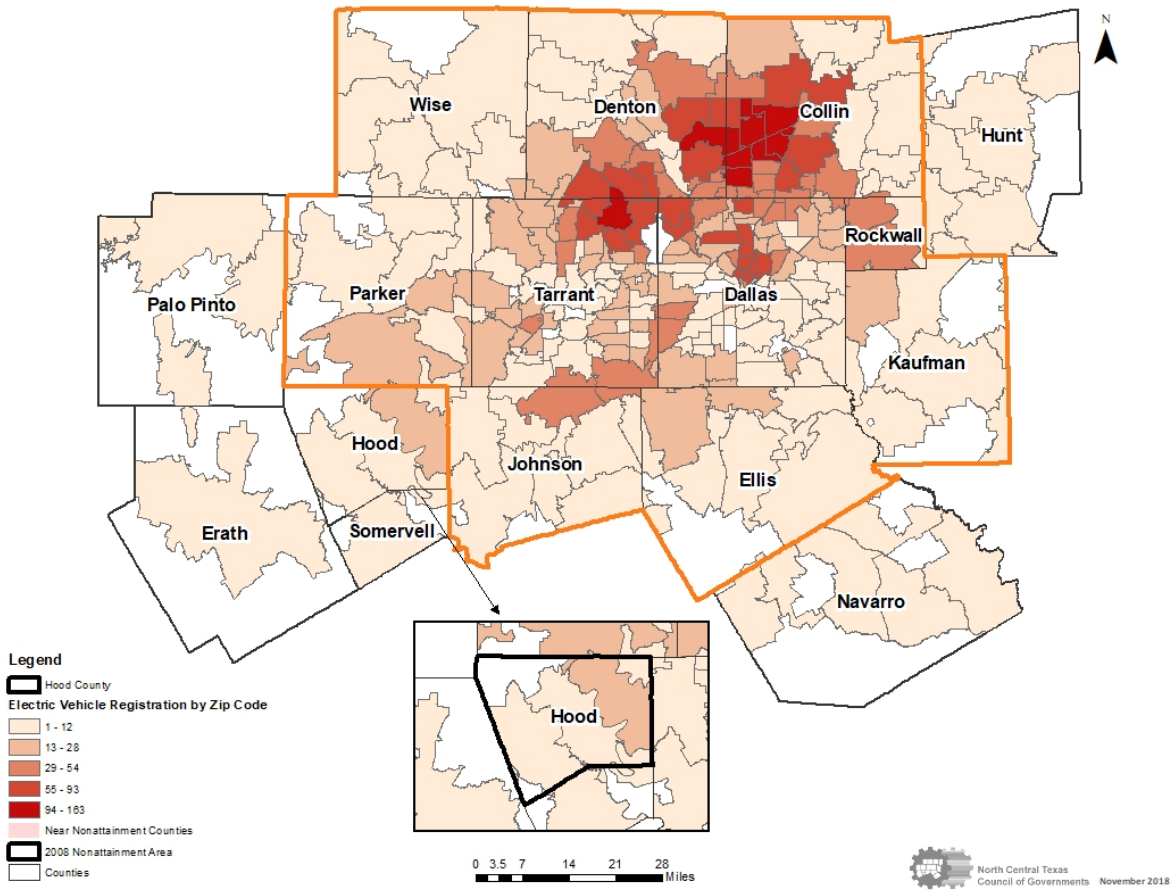
There were plans to research the possibility of converting an older diesel trolley to propane alternative fuel. This conversion was found to not be feasible. Through the TCEQ Rider 7 Grant, the city now has access to a propane fueling station. It is hoped with future funding opportunities that a new alternative fuel bus or trolley can replace the old diesel trolley. The local retirement centers including The Estates, Charterhouse at Lake Pointe, Waterview, Quail Park, Gardens of De Cordova, Arbor House, The Oaks of Granbury, Quail Park Assisted Living, The Courtyard at Lake Granbury, and Harbor Lakes Nursing and Rehab Center continue to operate busses for their residents' local transportation needs. The combination of reduction in trips and use of active transportation will result in emission reductions.

4.2.2.3 Alternative Fuel Vehicles

The HCCAC has partnered with different groups for two events to promote compressed natural gas and propane vehicles in 2014. A description of these events was included in the second annual update. The City of Granbury, Hood County, and Granbury ISD are considering the possibilities of alternative fuel vehicles. Two 2000 gallon tank propane fueling stations have been added for the city and county fleets and for Granbury ISD. Research is being conducted to identify vehicles in the city, county, and school district fleets for possible repower or replacement to propane fueled vehicles. In 2017, five propane mowers were purchased, aided by the Rider 7 Grant, benefitting the City of Granbury, City of Tolar, Granbury ISD, and Hood County. An alternative fuel program for on road heavy duty vehicles would produce a control efficiency of up to 60% for NOx and up to 13% for VOC (EPA, 2012b). These actions could result in significant reductions of NOx emissions. The Coalition is monitoring various other grant opportunities to pursue alternative fuel vehicles.

The North Central Texas Council of Governments provided a map to the HCCAC indicating the number of electric vehicles registered in Hood County. The map is below in Figure 10. It indicates a there has been some electric vehicle adoption in the County, particularly on the Northern side of the county.

Figure 10. Electric Vehicle Registration by Zip Code for the North Texas Region



4.2.2.4 Idling Reductions

In October 2013, the City of Granbury signed and sent a Memorandum of Agreement (MOA) to the Texas Commission on Environmental Quality (TCEQ) and adopted an Idling Restriction Ordinance. The city received the MOA signed by TCEQ in May 2014 and now has the authority to enforce the Ordinance. Hood County passed a voluntary idling restriction resolution in 2012. Enforcement of the Ordinance within city limits and education of the voluntary Resolution will help with emission reductions. Anti-idling signs supporting the voluntary measure of the county resolution were installed at four City of Granbury owned parking lots, one each in Cities of Tolar and Cresson, and in three county parking lots as well in 2015. Decals with the same message were placed on the bumpers of City of Granbury vehicles. Elimination of long duration idling can result in NOx reduction of 10-33% and VOC reductions of 21-60% (EPA, 2012b).

4.2.2.5 Travel Systems Management

TxDOT monitors the traffic signals on Highway 377 and makes adjustments as needed. Yellow turn arrows were added along Highway 377 in 2018 that help with the flow of traffic. Through the addition of turn lanes and signal improvement in the City of Granbury, emissions will be reduced.

4.2.3 Review of Air Permits

The Hood County Clean Air Coalition will continue to review any air permit received by TCEQ for new construction or modification of existing industrial sources in Hood County to identify possible air quality impacts. Air permits were reviewed in late December 2014 and January 2015. Information from these permits were included in the technical work completed in 2015 through the Rider 7 Grant from TCEQ. There were no new air permits to be reviewed. These efforts will be ongoing.

4.2.4 Modeling Emission Sources

Technical work including a Conceptual Model, Emission Inventory Review, and Photochemical Modeling was completed in the spring of 2015. The Conceptual Model and Photochemical Modeling reports used ozone modeling of the June 2006 episode. The Conceptual Model is a report that assembles and documents what factors contribute to high ozone in an area. It includes air quality data, emissions and meteorological data, and photochemical ozone modeling. The June 2006 ozone modeling associated with the Conceptual Model report indicated that the episode average contribution to the daily maximum 8 hour average ozone at the Granbury monitor by Hood County was 1.9 ppb while transport contributions were an estimated 74 ppb. In the modeling, days with ozone readings greater than 75 ppb at the Granbury monitor (C73) were most often associated with near-surface winds from either the east/northeast or east/southeast. The modeling also showed that, of all areas within Texas (including Hood County), the DFW area had the largest impact on ozone levels at the Granbury monitor (C73) (Parker et al., 2015). This information indicates that regional efforts to reduce emissions are very important to reducing ozone in Hood County. New technical work projects were completed in 2017 including an updated Ozone Model and photochemical modeling using newer data from a 2012 episode and a NOx emission trends analysis for the Hood County monitor. Findings of the 2017 NOx Emissions Trend report correlate with the emission reductions identified in the emission inventory.

4.2.5 Review of Efforts at Eagle Ford Shale

In the Eagle Ford Shale oil and gas development in South Texas, local stakeholders have been successful in encouraging local oil and gas development companies to be part of efforts to reduce emissions in the region. Oil and gas related companies have been included in the alternative fuel vehicle and infrastructure meetings in Hood County. There has been little new drilling in Hood County over the last 5 years and production has been in decline (Parker, et al., 2015). The decline in activity is reflected in the emission inventory review. While there are still emissions related to oil and gas, there has been a shift of focus from this area.

4.2.6 Improved Energy Efficiency

Hood County continues to seek funding through grant application and private capital for improved energy efficiency. These funds would allow for improved energy efficiency for local school districts, City of Granbury, and Hood County offices. United Cooperative Services, a local utility, constructed a LEED certified building addition which includes an energy management education center and a charging station for electric vehicles. The Tri County Cooperative and United Cooperative continue to offer free energy audits for customers.

In 2018, Granbury ISD installed a total of 41 solar led lights at five elementary school parking lots. Acton Elementary received seven of the lights, Baccus Elementary received eight of the lights, Brawner Elementary received eight of the lights, Emma Roberson Elementary received eight lights, and Oak Woods Elementary received ten lights.

5.0 Implementation Schedule

As part of the Ozone Advance Program, it is recommended that an area commit to a five year term, with an option to renew at the end of the term. Hood County joined the Advance Program in April 2012 and commits to continuing to follow the general schedule:

February 2019 Submit fifth annual report on status of local air quality, measures and programs in place and lessons learned, re-evaluate and revise path forward as necessary.

Summer 2019 Action on measures/programs:

- Review preliminary air monitoring results and re-evaluate path forward
- Research and develop new and/or revise existing measures/programs as appropriate
- Research and evaluate any funding opportunities against program goals

January 2020 Submit annual report on status of local air quality, measures and programs in place and lessons learned, re-evaluate and revise path forward as necessary.

Hood County continues to be committed to the Ozone Advance Program as part of its efforts to improve air quality in the region. Through the formation of the HCCAC, the county has brought together many groups of stakeholders to coordinate efforts to address the issues. The coalition represents that these stakeholders continue to support taking action to support clean air efforts including participation in the Ozone Advance Program.

Dave Porcher, Chairman of Hood County Clean Air Coalition

Michelle McKenzie, Air Quality Program Manager
Hood County Clean Air Coalition

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Appendix A

Hood County Clean Air Coalition Members

Name	Affiliation
Board Members	
Dave Porcher (Chairman)	Dave Porcher Mowing Service
Bruce White	Hood County Commissioner
Mark Clark	Luminant Environmental Manager
John Campbell	Owner Diamond C
Bob Cornett	Mayor, City of Cresson
Mark Franco	Total Equipment and Services
Nin Hulett	Mayor, City of Granbury
Terry Johnson	Mayor, City of Tolar
Joe Drew	Vista Sand
Members	
Tony Allen	Councilman for City of Granbury
James Deaver	Commissioner of Hood County
Jan Caldwell	Retired
Chris Klaus	Senior Program Manager, NCTCOG
Mauri Montgomery	United Cooperative, Director of Community Relations
Lee Overstreet	Winston Properties
Mike Scott	Granbury Chamber of Commerce
Dr. Allison Stamatis	Weatherford College
Congressman Charlie Stenholm	Retired
Shannon Stevenson	Program Manager, Transit Operations, NCTCOG
Chris Coffman	Granbury City Manager
Michael Ross	Granbury Assistant City Manager
Michelle McKenzie	Air Quality Program Manager, Hood County Clean Air Coalition