





<u>AGENDA</u>

Regional Freight Advisory Committee Joint Meeting with Dallas Fort Worth Clean Cities

North Central Texas Council of Governments Metroplex Conference Room

> Tuesday, February 13, 2018 12:30 p.m.

Welcome/Previous Meeting Recap Jeff Hathcock, NCTCOG
Funding Opportunities Allix Phibrick, NCTCOG
Port of Houston Clean Technologies Ken Gathright, Port of Houston
Idling-Reduction Technology John Thornton, CleanFuture, Inc.
Mobility 2045 Update Kevin Feldt, NCTCOG
General Discussion/Announcements All

Next Meeting: May 8, 2018



www.nctcog.org/rfac

Funding Opportunities for Vehicle and Fueling Infrastructure Projects

Regional Freight Advisory Committee Joint Meeting with Dallas Fort Worth Clean Cities

February 13, 2018



Dallas-Fort Worth CLEAN CITIES



North Central Texas Council of Governments

Major Funding Sources - Grants

Texas Emissions Reduction Program (TERP)

Administered by the Texas Commission On Environmental Quality (TCEQ)

Objectives Of TERP:

- Reduce Emissions From Pollutants
- Prevent Areas in the State from Violating National Ambient Air Quality Standards
- Advance Technologies that Reduce Nitrogen Oxides (NO_x)
- Support the Increased Use of Alternative Fuels

Since 2001, TERP Has Reduced Over 171,495 Tons NO_x



TERP Impact By Region



Vehicle Funding: Medium/Heavy-Duty Vehicles

Program	Eligible Activities	Funding Threshold
TERP Clean Fleet Program* (Expected Spring 2018)	Replace at Least 10 Diesel Vehicles with Alternative Fuel or Hybrid	Up to 80% of Total Vehicle Cost
TERP Natural Gas Vehicle Grant Program* (Expected Spring 2018)	Replace/Repower Heavy- or Medium-Duty Vehicle with Natural Gas	Up to 90% of Incremental Cost of Natural Gas Vehicle
TERP Emissions Reduction Incentive Grant (Expected Spring 2018)	Replace/Repower/New Purchase/Retrofit Heavy- Duty Vehicles and Equipment	Up to 80% of Eligible Costs
TERP Seaport and Rail Yard Areas Emissions Reduction Program* (Expected Spring 2018)	Replace/Repower Drayage Truck or Cargo Handling Equipment	Up to 80% of Eligible Costs

*Program Changes Made In 2017 Legislative Session, Senate Bill 1731

Infrastructure Funding

Program	Eligible Activities	Funding Threshold
TERP Alternative Fueling	Install Alternative Fuel	Up to 50% of Project
Facilities Program	Infrastructure in the Clean	Cost, Limited to a
(Deadline: March 29, 2018)	Transportation Zone	Maximum of \$600,000

Clean Transportation Zone



Major Funding Sources – Volkswagen Settlement

Total Settlement to Date: \$14.7 Billion

Zero Emission Vehicle (ZEV) Investment - Managed by Electrify America

Environmental Mitigation Trust (EMT) - Distributed to States



Potential Funding – Volkswagen Settlement

TCEQ Now Accepting Comments on Environmental Mitigation Plan! If Any of These Projects are of Interest be Sure to Submit Comments

Eligible Vehicle/ Equipment Types	Eligible Activities	Funding Threshold
Class 8 Freight & Port Drayage Trucks		40% Repower 25% - 50% for Replace 75% for All-Electric 100% if Government Owed
Class 4-7 Freight Trucks	Replace or Repower Existing Diesel Trucks/Equipment	40% Repower 25% Replacement
Freight Switchers		75% for All-Electric
Port Cargo-Handling Equipment		100% if Government Owed

Electric Vehicle Charging Infrastructure is Eligible for Funding As Part of a Project to Replace/Repower with Electric Vehicle/Equipment – if Needed

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NCTCOG Identifying Demand for Projects in DFW

Collaborations Among Regional Councils Could Lead to State-Level "Bundling" of Purchases

www.nctcog.org/airquality

Air Quality



On Volkswagen Page: "NCTCOG Survey: Fleet Project Wish List"



Go to: www.nctcog.org/aqfunding



Contact Information

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North Central Texas Council of Governments



Dallas-Fort Worth 10 CLEAN CITIES



Regional Freight Advisory Committee

Ken Gathright | Environmental Compliance Coordinator | Port Houston | February 13, 2018



Port Commission





Janiece M. Longoria Chairman



John D. Kennedy





Dean E. Corgey







Clyde Fitzgerald



Roy D. Mease

What is Port Houston?



- Port Houston = Port of Houston Authority
- Port Houston is comprised of 8 operating facilities among the 150+ private and public facilities that line the Houston Ship Channel.



Air Quality Houston-Galveston-Brazoria Area







Nonattainment for Ground-level Ozone



What Does Port Houston do for air quality?

Goods Movement Emission Inventory 🍃

- PHA commissioned the first Goods Movement Emissions Inventory (GMEI) in 2000 (for calendar year 1997)
 - Updated In 2009, for calendar year 2007
 - Second update for calendar year 2013 is nearly complete.
- Future updates will be every 5 years.





2013 Port Houston Associated Goods Movement Air Emissions



Port Houston Emissions Contribution In Houston Area

2011 Houston Galveston



2011 Houston Galveston Brazoria SIP NOx emissions



Clean Air Strategy Plan



- PHA's Clean Air Strategy Plan (CASP) is aimed at reducing emissions from ocean going vessels, harbor vessels, cargo handling equipment, locomotives, and drayage trucks.
- The CASP document was prepared in 2011 and is currently being updated.



Port Houston Container Drayage Trucking Characteristics



- Port Houston operates the Barbours Cut and Bayport container terminals.
 - Barbours Cut about 2,100 truck visits a day
 - Bayport about 3,000 truck visits a day
- 17,205 trucks visited these terminals for a total of 1,208,226 truck trips in 2016.
 - 80% of drayage trucking fleet is operated by independent owner/operators.
- 622 different trucking companies visited these terminals.
 - 50 trucking companies that came the most accounted for 69% of the truck trips.

Port Houston Container Drayage Trucking Characteristics



Engine Model Year	NOx Standard (g/bhp-hr)	% of Trucks
1989 and older:	10.7	0.37%
1990	6	0.04%
1991-1997	5	13%
1998-2003	4	32%
2004-2006ª	2.375	31%
2007-2009 ^b	1.2	9%
2010 and newer	0.2	14%

a. Standard is actually 2.4 g/bhp-hr for NMHC+NOX but TCEQ assumes 2.375 g/bhp-hr for NOx.

b. Most manufacturers certified their 2007-2009 engines to a NOx limit of about 1.2 g/bhp·hr.

Port Houston DERA Grants



- Port Houston has been awarded \$8.2 million in DERA funds
 - 64 yard tractor replacements
 - 26 yard tractor retrofits
 - 31 forklift replacements
 - 14 forklift repowers
 - 1 rubber wheel loader replacement
 - 3 marine engine repowers
 - 13 drayage truck replacements
 - Cleaner fuel use in 163 ocean-going vessel calls





Hybrid RTGs



- 5 Hybrid RTGs at Barbours Cut
- Operate from 40 to 60% on batteries









Operational improvements at Bayport and Barbours Cut terminals

Container Tracking Mobile App



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	Autoridad Portuaria de Houston Terminal de Contenedores Bayport		
	Anuncios de la Terminal		
	Disponibilidad de Contenedor		
	Consultas de Reservas		
	Lista de Embarcaciones		
	Encuesta de Equipo		
	PortofHouston.com		
	VERSIANT		
	6 2013 Versiant Corporation		



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Atrás	Lista de Embarcaciones		
Barco:	CMA-CGM JAMAICA		
Partida:			
Empleza a Recibir:	2015-05-28 00:00		
	Fechas de Clausura:		
Carpo:	2015-06-02 17:00		
Peligro:	2015-06-01 17:00		
Refrigerador:	2015-06-02 17:00		
	VERSIANT 02013 Venier Corporation		

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	Port of Houston	6	
Atrás	Resultados de Contenedor		
	Listo Para ser Recogido		
Resultados de Contenedor	GE\$U1382685		
Estado de Linea:	RELEASED		
Estado de Aduana:	RELEASED		
Retención:			
Linea de Envio:	US Lines LLO(ANLC)		
Tamaño/Tipo/Altura:	20GP86		
	0 2013 Version Corporation		

Extended Gate Hours



- Bayport terminal recently extended gate hours from 7 pm to 11 pm
- Allow for more off-peak traffic
- Around 6% of trucks are coming during this time



2018-02-05 18:58:33

Optical Character Recognition (OCR)



Bayport Inbound





Bayport Outbound







Trucks do not cross traffic





Old Entrance Truck Gate - trucks use to cross traffic lanes when entering

Trucks now enter by turning right and then cross under Port Road

Port Rd at truck exit has been restriped





Stop sign was removed at truck exit and Port Rd. has been restriped to allow two lanes of trucks to exit onto road without stopping

Flyover from SH 146 to Port Rd





Southbound SH 146 to Port Rd flyover has been built

Port Rd to northbound SH 146 flyover was recently finished

On the Horizon



- Trucking companies will be able to do paperwork online before trucks visits terminal
 - Will allow for faster processing time through gates.

Operational Improvements



Who Benefits?

- Truck Drivers better gas mileage, no wasted trips, and more pay (more trips = more pay)
- PHA more efficient truck flow means more productivity
- Environment less air emissions released into the atmosphere

Alternative Fuel Use



- Diesel and gasoline primarily used in our operations
 - Biodiesel is not used because it does not reduce nitrogen oxides (NOx)
 - Natural gas only used in a handful of forklifts. However, VW settlement funds may allow for more natural gas and/or electric equipment/heavy duty vehicles.




Name

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Idle Reduction in Transport Refrigeration: A Technical Assistance Case Study to Reduce Idling in Transport Refrigerators

Pollution Prevention (P2) project from October 2015 to June 2017

Presented to: Regional Freight Advisory Committee Joint Meeting with Dallas Fort Worth Clean Cities

John A. Thornton, CleanFuture, Inc.









Opportunity (Problem Statement): Transport Refrigeration Units (TRU) aka Reefer

Big **refrigerators on wheels**, running on **diesel while parked**, often **running parked for a long time**

40% to 60+% idling on diesel



- Expensive
- Polluting
- Noisy







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Solution: Idle Reduction Technology

Electrified Parking Spaces (EPS) Grid-connected Electric Transport Refrigeration Units (eTRU)



Big **refrigerators on wheels**, running on **diesel electricity while parked**, often running **parked for a long time**.



- Cheap (inexpensive)
- Clean (no source emissions)
- Quiet







eTRU Electric Infrastructure Description





Transport Refrigeration in Food Supply Chain



Cold Chain Point











Project Partners:



Participants:





DPI Specialty Foods **KOOL PAK**^o

+ 18 other anonymous refrigerated fleets

Technical Assistance Addresses Key Barriers*

Barrier	Solution		
Not aware of electric-capable TRU technologies (eTRU)	Outreach,		
Lack knowledge on the operating cost advantages of eTRU over diesel	Workshops		
Little visibility or poor understanding of their idling time	Technical Assistance		
Fleets shy away from the acquisition cost of electric infrastructure and/or electric-capable TRUs without understanding total operating cost or return on investment	(Fleet studies, onsite assistance, coaching, idle management systems, etc.)		

* Top four barriers identified in other research: *Market and Technology Assessment of Electric Transport Refrigeration Units.* EPRI, Palo Alto, CA: 2015. <u>3002006036</u>





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Approach: Use Fleet Data to Affect Change

- - Fleet Analytics
 - Big Data & Business Intelligence
 - Telematics Integration
 - Fleet ROI
 - Motivation & Justification









Why Use Information to Affect Transportation Choices?

Perceptions:

- "We make good utilization of our reefer trailers, we don't run our units stationary very much."
- "We load and go."
- "We don't run our reefers more than an hour at our facility"
- "We only pre-cool for 30 to 45 minutes"
- "We don't run our units with the trailer doors open."
- "Diesel fuel prices are low, electricity is more expensive"
- "The cost to electrify our facility is too high, it'll never pay back"

Reality:

• Operating data sets the record straight





Why Use Information to Affect Transportation Choices?





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Reality: A day in the life of a TRU at a Grocery Distribution Center







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Example #1: Food Distribution Company



- Distribution Centers Locations: 8 in U.S.
- Fleet size:
- Sample Size:
- Measurement Period:
- Operation:
- Outcomes:

24 at site, out of 324 reefer trailers

- 3 Refrigerated Trailers
- 8 months
- 6 days / week

Implementing technology at first site, evaluating other sites





Example #1: Food Distribution Company

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48% to 58% of TRU engine run hours were idling at home distribution center over 8 month measurement period.



Example #1: Economics at Food Distribution Company





* Net investment and payback after application of incentives.

** NPV & IRR shown before application of incentives (if applicable).







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Project Outputs and Outcomes

- Participants included 19 businesses with 40 distribution center locations
 - Increased awareness
 - 16 scoping studies
 - 24 technical studies
 - Installed and implemented three (3) eTRU projects during 18 month project period

Source	P2 Activity	Sector	Haz Materials Reduced (Ibs.)	MTCO ₂ e Reduced	Water Saved (gallons)	Savings (\$)
P2-001	Replaced diesel TRU idling with grid electricity (eTRU)	Food Distribution	4,578	324	0	\$71,081
P2-016	Replaced diesel TRU idling with grid electricity (eTRU)	Foodservice Distribution	4,288	523	0	\$60,570
P2-020	Reduced diesel TRU idling through behavior change	Grocery Distribution	1,259	154	0	\$16,224
Total			10,125	1,001		\$147,875

• Additional project implementation(s) pending





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Information Affects Decision Making Grid-connected Electric Transport Refrigeration Units (eTRU)

- - Electrified Idle Reduction is a viable and available technology:
 - Societal benefits
 - Emission reductions
 - Particulate Matter (PM)
 - Nitrous Oxides (NOx)
 - Greenhouse gases
 - Compelling and cost-effective emissions reduction
 - Reduced noise
 - Environmental justice
 - Beneficial Electrification
 - New way to use electricity as a substitute for fossil fuel
 - End-use Fleet benefits
 - 40 70% reduction in operating costs
 - Refrigerated Transport industry has been very slow to adopt.
 - More about behavior change / market adoption than technology





Acknowledgements

- This project was funded in part by the U.S. Environmental Protection Agency (EPA) though the Pollution Prevention program.
 - Provides technical assistance and training to businesses on source reduction techniques to reduce pollution.
- Project Partners:
 - Portland State University
 - Transportation Research Education Center (TREC)
 - CleanFuture, Inc.
 - Forth
- Additional support was provided by:
 - Shorepower Technologies.









Thank You!

More Information:

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CLEAN CITIES



Regional Freight Advisory Committee

February 13, 2018





- 1. Why New Mobility Plan?
- 2. Mobility Plan Process
- **3. Demographics**
- 4. Recommended Roadway Plan
- 5. Mobility 2045 Financial Plan
- 6. Recommended Policy Revisions
- 7. Schedule and Next Steps





Why New Mobility Plan?





What is the Mobility Plan?

Required by Law





Covers at Least a 20-Year Timeframe



Responds to Goals



Identifies Policies, Programs, and Projects for Continued Development



Guides the Expenditure of Federal and State Funds





Important Dates

Action	Mobility 2040	Mobility 2045	Mobility 2045 Amendment
RTC Adoption	March 9, 2016	June 14, 2018	~ June 2020
Conformity Determination	November 23, 2016	*November 23, 2018	~ November 2020
Comments	Additional funding Policy bundle emphasis	Take advantage of required conformityNew performance measuresEmerging Technologies and trends	TBD





Why New Mobility Plan

New AQ Budgets Found Adequate November 23, 2016

Must Have Conformity Determination Using New Budgets Within 2 Years (11/23/2018)

Best to Restart 4-Year Mobility Plan Clock Simultaneously





New Mobility Plan

- New Base Year 2018
- New Horizon Year 2045
- Air Quality (AQ) Conformity Determination
 - November 23, 2018 (Deadline)
- **Environmental Documentation Consistency**
- **Consistency with 10-Year Plan**
- **FAST Act Requirements**
- 85th Texas Legislative Session Outcomes





Mobility Plan Process





Mobility Plan Process







Mobility 2045 Goals

Mobility

Improve Transportation Options Support Travel Efficiency Strategies Ensure Community Access to System and Process

Quality of Life

Enhance Environment and Life Styles Encourage Sustainable Development

System Sustainability

Ensure Adequate Maintenance, Safety and Reliability Pursue Long Term, Sustainable Financial Resources

Natura

Environment

Sustaina

Economic Vitality

Implementation

Provide Timely Planning and Implementation Develop Cost Effective Projects and Programs



Prosperity and Mobility

Region Is Prospering

Adding 100,000+ Population Annually Adding 60,000+ Jobs Annually

Corporate Relocations

Toyota

Liberty Mutual

State Farm

Amazon?

Mobility Key Factor







DFW Congestion Levels



Sources: TomTom Traffic Index 2013, 2014, 2015 and 2016 Data; North Central Texas Council of Governments

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Dallas-Fort Worth

Texas Metro Congestion Levels



Demographics





Regional Perspective



Population

- 12. Virginia 8,411,808
- 13. Washington 7,288,000
- ★ DFW 7,123,170
- 14. Arizona 6,931,071
- 15. Massachusetts 6,811,779
- 16. Tennessee 6,651,194

Source: US Census Bureau July 2016 estimate and NCTCOG DFW estimate is January 1, 2016

Note: Lake Erie = 9,910 square miles

Area (square miles)

44. Massachusetts – 10,554

45. Vermont – 9,616 ★ DFW – 9,441

46. New Hampshire – 9,349

- 47. New Jersey 8,722
- 48. Connecticut 5,543
- 49. Delaware 2,448
- 50. Rhode Island 1,545

Source: US Census Bureau, 2010 Census and NCTCOG





2045 County Population Forecast

County	2005	2040	2045
Rockwall	59,578	166,357	181,561
Denton	541,622	1,241,681	1,346,314
Collin	647,831	1,560,421	1,689,170
Kaufman	86,119	210,097	224,205
Ellis	128,123	283,898	300,955
Parker	98 <i>,</i> 950	195,286	206,811
Tarrant	1,587,173	3,094,649	3,263,616
Hood	45,934	81,578	85,739
Johnson	138,231	252,521	262,868
Wise	54,568	101,865	105,796
Dallas	2,224,183	3,357,469	3,445,189
Hunt	80,978	131,022	134.291
Region	5,695,295	10,676,844	11,246,516





2045 County Employment Forecast

County	2005	2040	2045
Rockwall	24,025	53,372	58,611
Collin	359,914	762,920	835,342
Wise	23,710	47,224	51,510
Parker	44,544	80,404	86,883
Denton	205,991	445,070	479,620
Hood	15,011	29,448	31,727
Kaufman	35,352	64,040	68,290
Ellis	53,591	96,872	102,696
Johnson	59,327	105,198	111,281
Tarrant	947,961	1,739,327	1,827,385
Hunt	39,064	70,099	72,659
Dallas	1,809,315	3,197,475	3 298 213
Region	3,617,805	6,691,449	7,024,214




Recommended Roadway Plan





Major Roadway Recommendations



Council of Governments

Arterial Capacity Improvements





February 7, 2018

and operational characteristics will be determined through ongoing project development.

Priced Facility Recommendations



Council of Governments

February 8, 2018

"Freeway" Recommendations



Council of Governments

February 7, 2018

Major Roadway Recommendations



Council of Governments

Roadway Corridors for Future Evaluation



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Connected System "One Seat Ride" **Three Stations Fort Worth** Arlington **Dallas**



Source: Getty Images





High-Speed Rail Recommendations







Fort Worth CBD



North Central Texas

Council of Governments



Corridor-specific alignment, design, and operational characteristics for the intercity passenger, regional passenger, and freight rail systems will be determined through capacity evaluation and ongoing project development. Refined rail forecasts are necessary to determine technology and alignment in future rail corridors.

Additional Plan Components

- ✓ Sustainable Development
- ✓ Pedestrian Facilities
- ✓ People Movers
- ✓ Freight
- ✓ Aviation



- Transportation Demand Management
 Transportation System Management
- Transportation System Safety and Security





Additional Plan Components

✓ Environmental Considerations

- ✓ Natural Environment Including Extreme Weather Resiliency
- ✓ Environmental Justice
- ✓ Social Considerations
 ✓ Financial Plan
- ✓ Technology
- ✓ Policies
- ✓ Programs✓ Public Transportation







Mobility 2045 Financial Plan





Transportation Funding Basics





* Revenue from existing NTTA facilities after bonds are retired.



Prioritization and Expenditures

DRAFT		2040	2045
Maximize Existing System	Infrastructure Maintenance Maintain & Operate Existing Facilities Bridge Replacements	\$37.4	\$ 38.7
	Management and Operations Improve Efficiency & Remove Trips from System Traffic Signals and Bicycle & Pedestrian Improvements	\$7.2	\$ 9.6
	Growth, Development, and Land Use Strategies More Efficient Land Use & Transportation Balance	\$3.6	\$ 3.2
Strategic Infrastructure Investment	Rail and Bus Induce Switch to Transit	\$27.2	\$ 33.4
	HOV/Managed Lanes Increase Auto Occupancy	\$43.4	\$ 50.6
	Freeways/Tollways and Arterials Additional Roadway Capacity		
* Action	ual dollars, in billions. Values may sum due to independent rounding.	\$118.9	\$ 135.5

Regional Funding



February 7, 2018

and operational characteristics will be determined through ongoing project development.

Recommended Policy Revisions





Proposed Policy Additions

Freight

Encourage Regional Railroads to Participate in Regional Planning

Technology

Support Infrastructure Maintenance

Encourage Automated Vehicles

Encourage Data Sharing





Managed Lanes Evolution



Proposed Policy Additions

General

Support Ability to Modify Mobility Plan for Emergency Operational Improvements

Technology Lanes

Managed Lanes

Access Ramps

Auxiliary Lanes



Managed Toll Lane System

Support Implementation within a Tolled Managed Lane Policy Area





Toll Managed Lane System Policy Boundary



Tolled Managed Lanes

Purpose: Manage Congestion Effect: Increased Mobility Improved Speeds in Tolled Lanes Speeds 50% Faster for Non-Tolled Lanes Speeds 75% Faster for Tolled Lanes Project Funding Supplement Allow Private Sector Participation Users Average About \$10 per Month Drivers Have Choice and Predictability



Next Steps





Transportation Project Process



Mobility 2045 Schedule



Notes:

- Public meetings held during highlighted months.
- Regional Transportation Council action on Mobility 2045 Plan scheduled for June 14, 2018.







Revise Recommendations

Public Comment Period – April and May

Review and Action

Technical – May 25

Policy Board – June 14







Questions?

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