

# Recommendations Concerning Regional Idling Strategy in the OTR

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OTC Mobile Source Committee

Idling Workgroup

10/30/2017





## Executive Summary

The OTC charged the Mobile Source Committee at the 2016 Fall Meeting to “develop a recommendation [for a regional idling strategy] which should be based on the principles of the Best Practices document adopted by OTC in 2015.” This paper is intended to weigh several options for such a program and put forth a recommendation of what should be pursued.

The options to be considered:

1. Truck Stop Electrification (TSE) expansion
2. Electric Transport Refrigeration Units (eTRU)
3. Port strategies
4. Locomotive idling
5. Nonroad Idling model rule adoption
6. Idling reduction commitments
7. Enforcement/regional governmental body education efforts
8. Regional owner/operator education efforts

None of these options alone will solve the problem of unnecessary idling. A successful set of policies will require engineering solutions, education of owners/operators, and enforcement of regulations in tandem. There are additional technological solutions that were discussed in OTC’s *Overview of Efforts to Reduce Idling in the Ozone Transport Region*, but a nationwide approach to adoption of a one-size fits all technology for individual tractor trailers, trains, etc. would be beyond the scope of these recommendations which are focused regionally.

After discussions with stakeholders, review of documents, and other research the following recommendations were developed for each option. Since states each have their own vehicle fleet mixes, priorities, and limitations they are listed in no set order of priority.

### Truck Stop Electrification (TSE)

1. Work with landlords to discourage trucks that plan to idle from using electrified spaces excepting when all non-electrified spaces have been filled.
2. Increase the number of electrified spaces at existing truck stops, in particular at stops that are at capacity, along corridors with high freight travel, and ones that are part of the Alternative Fuel Corridor program.
3. Leverage collaborations and policies to encourage new truck stops to electrify from the beginning.
4. Work with TSE companies and landlords to encourage adoption of a reservation system for electrified spaces, and/or spaces in general.
5. Encourage fleet owners to allow gas cards to be used for TSE.

### Electric Transport Refrigeration Units (eTRU)

1. OTC member states should work to expand eTRU in the OTR.
2. Expansion of eTRU should be done with a consistent standard.
3. Work to eliminate the practice of weekend/holiday storage.
4. Follow development of CARB’s eTRU regulations and consider them as a potential OTC model rule.

### **Port Strategies**

1. Continue progress already made to reduce queuing.
2. Electrify drayage trucks and nonroad equipment used at ports.
3. Ensure requirements, for ships in particular, are consistent throughout the region.
4. Partner with the Northeast Diesel Collaborative Ports Work Group.
5. Collaborate with EPA Regions to implement the EPA Ports Initiative.

### **Locomotive Idling**

1. Develop a strategy for cost sharing to increase idling technologies on locomotives.
2. Work with existing locomotive trade groups to increase outreach.
3. Hold regional forums to improve dialog between state agencies and railroads.

### **Nonroad Idling Model Rule Adoption**

1. OTC member states that have not adopted the model rule should do so.

### **Idling Reduction Commitments**

1. OTC should not pursue commitments to specific emission reductions from idling.

### **Enforcement/regional governmental body education efforts**

1. Develop and hold a regional workgroup that includes environmental, law enforcement, and transportation departments to learn about idling regulations. This might be a troublesome
2. Ensure the environmental department has the authority to enforce idling restrictions.
3. Consider enforcing idling restrictions at electrified truck stops.
4. Start an electronic tracking systems (ETS) case study.
5. Turn sticks into carrots.

### **Regional Owner/Operator Education Efforts**

1. Focus education on the issues that affect owners/operators.
2. Rely on existing materials for education efforts if they aren't state specific.
3. Work with existing trade groups to increase outreach.
4. Increase communications on media that owners/operator use.
5. Keep outreach continuous.

## Acknowledgements

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## Introduction

The OTC charged the Mobile Source Committee at the 2016 Fall Meeting to “develop a recommendation [for a regional idling strategy] which should be based on the principles of the Best Practices document adopted by OTC in 2015.”<sup>1</sup> This paper is intended to weigh several options for such a program and put forth a recommendation of what should be pursued.

The papers focus on idling reduction in areas with commercial interests since the number of parties (owners, operators, etc.) is comparatively small and the emissions per time spent idling on a per unit basis for commercial vehicles and equipment is high since they are often heavy-duty.

The options to be considered:

1. Truck Stop Electrification (TSE)
2. Electric Transport Refrigeration Units (eTRU)
3. Port strategies
4. Locomotive idling
5. Nonroad Idling model rule adoption
6. Idling reduction commitments
7. Enforcement/regional governmental body education efforts
8. Regional public education efforts

None of these options alone will solve the problem of unnecessary idling. A successful set of policies will require engineering solutions, education of owners/operators, and enforcement of regulations in tandem. There are additional technological solutions that were discussed in OTC’s *Overview of Efforts to Reduce Idling in the Ozone Transport Region*, but a nationwide approach to adoption of a one-size fits all technology for individual tractor trailers, trains, etc. would be beyond the scope of these recommendations which are focused regionally.<sup>2</sup>

Also given levels of resources at OTC, OTC member states, and EPA, as well as jurisdictional issues that will be discussed in some sections it is vital to partner with other organizations whether it be trade groups, the Northeast Diesel Collaborative’s Clean Freight Corridors, Metropolitan Planning Organizations (MPOs), Departments of Transportation (DoTs), environmental groups, consulting groups with expertise, or others that are mentioned throughout this report in order to successfully reduce emissions from idling. It is also important to work with other groups to avoiding redundant efforts. Additionally more specific plans ...

In order to ensure well rounded recommendations, conversations were held to discuss different aspects of the recommendations with several stakeholders including Shorepower, CleanFuture, IdleAir, the I-95 Corridor Coalition, California Air Resources Board (CARB), and MJ Bradley.

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<sup>1</sup> Ozone Transport Commission, “Charge to the Mobile Source Committee to Pursue Potential Strategies for Regional Attainment of Ozone National Ambient Air Quality Standards,” November 17, 2016.

<sup>2</sup> Ozone Transport Commission, *Overview of Efforts to Reduce Idling in the Ozone Transport Region*, April 11, 2016.

## Analysis of Options

### *Option 1: Truck Stop Electrification (TSE)*

#### Background

Hoteling occurs when truck drivers park for periods of many hours while traveling, often overnight. This is typically done for resting and rest periods are required for safety reasons. Current regulations require rest periods of at least 10 hours following the end of a work shift and a work shift that is at most 14 hours, among other requirements (49 CFR 395.3). These rest periods often occur while the driver is on the road, rather than at a home base, where the cab provides the only amenities available, which often requires idling. This means that hoteling will continue to occur; the need is for the impacts of idling during the hoteling period.

EPA estimates that diesel vehicles idle for hoteling for up to 10 hours per night which can result in up to 2,500 hours idling annually.<sup>3</sup> This idling also burns approximately 0.8 gallon of diesel per hour and wears the engine, which costs owners or operators on average \$7,250 annually at a rate of \$2.50/gallon for fuel and \$0.90/hour for engine wear.<sup>4,5</sup> However, using an electrified space for overnight hoteling usually costs just under \$2.00/hour which saves money and produces no local emissions. There are upfront costs in the range of \$10 for a window adapter needed to use a single-system that provides a range of amenities including electricity and air conditioning and \$2,500 needed to wire a cab for systems that simply run AC power from a pedestal to a tractor (a dual-system), although newer vehicles often come with this wiring installed.<sup>6</sup> Solar powered electrified spaces reduce hoteling emissions even further. Current market penetration for some onboard idling reduction technologies (i.e., APUs, but not battery AC systems or diesel fired heaters) on heavy-duty diesel truck fleet is decreasing, whereas market penetration for off-board powering capabilities is increasing.<sup>7</sup> However, there are hurdles that need to be overcome in order to reap these emissions benefits on a larger scale in the OTR.

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<sup>3</sup> US EPA and National Highway Traffic Safety Administration, *Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles -Phase 2*, Regulatory Impact Analysis, August 2016.

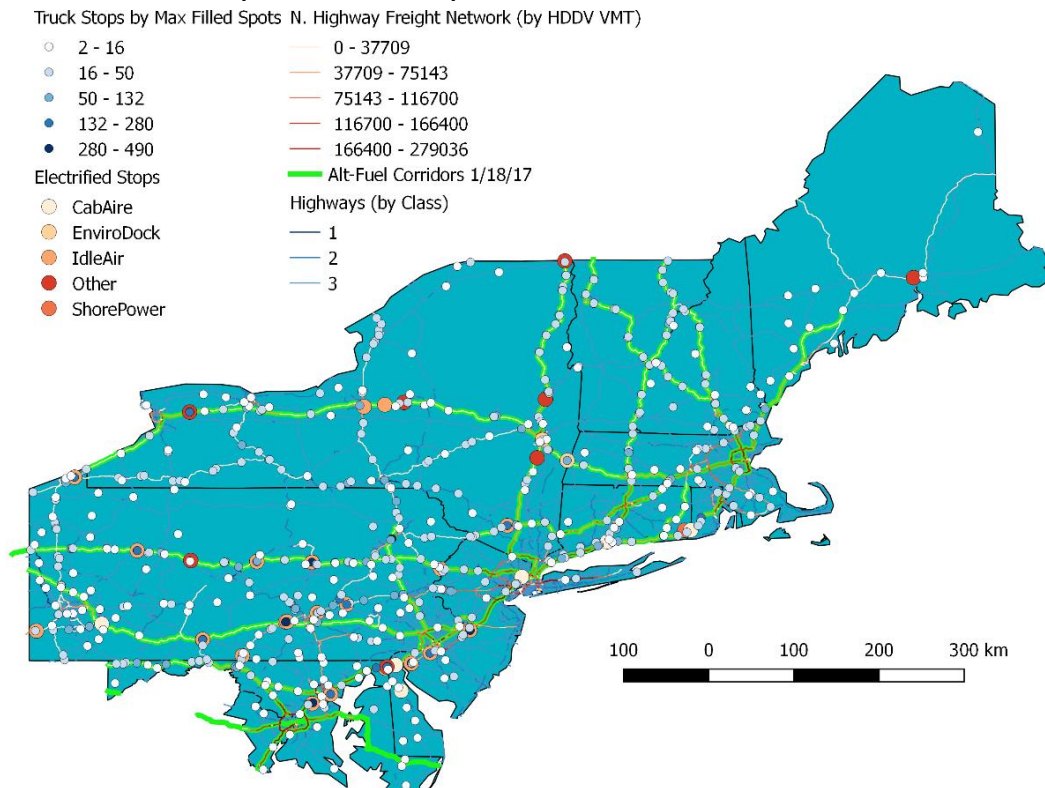
<sup>4</sup> US Department of Energy, "Long-Haul Truck Idling Burns Up Profits," 2015.

<sup>5</sup> Semant Jain, Hsieh-Yeh Chen, and Johannes Schwank, "Techno-Economic Analysis of Fuel Cell Auxiliary Power Units as Alternative to Idling," *Journal of Power Sources* 160, no. 1 (September 2006): 474–484, doi:10.1016/j.jpowsour.2006.01.083.

<sup>6</sup> Linda Gaines and Patricia Weikersheimer, *Idling Reduction for Long-Haul Trucks: An Economic Comparison of On-Board and Wayside Technologies*, September 2016.

<sup>7</sup> Felipe Rodríguez et al., *Market Penetration of Fuel-Efficiency Technologies for Heavy-Duty Vehicles in the European Union, The United States, and China*, May 2017, [http://www.theicct.org/sites/default/files/publications/HDV-market-penetration\\_ICCT\\_White-Paper\\_050917\\_vF\\_corrected.pdf](http://www.theicct.org/sites/default/files/publications/HDV-market-penetration_ICCT_White-Paper_050917_vF_corrected.pdf).

**Figure 1: Location of Truck Stops and Electrified Spaces in the OTR<sup>8</sup>**



## Challenges

As of March 16, 2017 there were 41 truck stops with electrified spaces in the OTR, which is approximately 6% of truck stops in the OTR (see Figure 1).<sup>9</sup> This means there are many gaps in the TSE network, which results in truck operators not being able to dependably find electrified spaces. Filling gaps may be more challenging since TSE for payment is not allowed at rest stops along interstates that were built after 1956 under federal law that prevent the commercialization of rest stops<sup>10</sup>. In a conversation with IdleAir, concerning an internal survey they conducted of their users, they cited a need for more electrified spaces as an impediment to their use.

Some truck stop landlords do not always prevent trucks from parking in electrified spaces that they do not intend on using, though most will keep them open until all other spots are filled. Formal reservation systems don't appear to be available at most truck stops for drivers that would prefer to use an electrified space, though there is anecdotal evidence that some truck stops will reserve electrified spaces for regular users. Enforcement of idling restrictions at truck stops by government enforcement personnel is said to be minimal. Finally, there is a lack of truck stops in the I-95 corridor so many operators will simply make deliveries in the OTR and drive to an area with higher parking space capacity rather than hotel overnight.

There are also financial issues that are not resolved for all potential users of TSE. When TSE is installed at a private facility for use by a private fleet, the owners of the fleet receive the cost savings from using

<sup>8</sup> Note that CabAire has filed for bankruptcy.

<sup>9</sup> US Department of Energy, "Truck Stop Electrification Locator," [http://www.afdc.energy.gov/tse\\_locator/](http://www.afdc.energy.gov/tse_locator/).

<sup>10</sup> Federal Highway Act of 1956, 1956.



TSE over diesel fuel during hoteling and can require their drivers to use electricity. Operators that own their own truck also face the same financial incentive to save money since they are paying for both diesel fuel and electricity. However, there are many large fleets where the operators use a gas card to purchase fuel that is paid for by the fleet owner, but the operator has to pay to use the electrification equipment at a personal cost, which limits their incentive to use it. Some large fleet owners now allow gas cards to be used at electrified spots, but this is not widespread.

## Recommendations

1. **Work with landlords to discourage trucks that plan to idle from using electrified spaces excepting when all non-electrified spaces have been filled.** At some truck stops landlords do not require that electrified spaces be used by non-idling trucks, though some will still save electrified spaces until other spaces have been filled. This means that a truck that would not idle that arrives later cannot use an electrified space. Landlords do have incentives to fill all available spaces, so there would need to be incentives in place to make sure that TSE spaces are set aside even if they go unfilled. There are also issues with a lack of available truck spaces in general in the OTR, exacerbating the issue. There are also technologies that some TSE companies have to automatically shut off electrification systems and alert onsite personnel that a truck is idling at an electrified space that could assist in managing this, though this type of technology is typically installed at private facilities.
2. **Increase the number of electrified spaces at existing truck stops, in particular at stops that are at capacity, along corridors with high freight travel, and ones that are part of the Alternative Fuel Corridor program.** Increasing the number of electrified spaces will work to fill in gaps in the network, which in turn will increase the dependability for truck drivers to be able to find an electrified space when needed. There are just too many gaps in the OTR for network effects to happen. The US DOT FHWA Alternative Fuel Corridor<sup>11</sup> program is also increasing signage for EV's and are typically highly trafficked interstate corridors. It is also recommended that it should be considered that new spaces have smaller footprints, by relying on dual-system spaces rather than single service systems, so that they do not exacerbate already existing problems with capacity, though this would mean more vehicles have to be retrofitted to use the dual-system spaces, so the balance needs to be considered. The DERA option from Appendix D of the Volkswagen settlement likely could be used to fund 25% of such projects.<sup>12,13</sup>
3. **Leverage collaborations and policies to encourage new truck stops to electrify from the beginning.** A major cost to electrification retrofits comes from needing to lay new conduit under already paved surfaces to install the electric infrastructure.<sup>14</sup> This is especially true for pedestal (shore power) installations (since wiring is a larger cost in proportion to the device cost). By incentivizing new truck stops to install electric infrastructure during initial construction, cost savings can be achieved and a new truck stop will not face behavioral changes from requiring the spaces to only be used by non-idling trucks. In some cases partners with existing relationships with truck stop landlords could help facilitate the awareness of the value of electrification due to their existing relationship with the necessary stakeholders. A different

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<sup>11</sup> [http://www.fhwa.dot.gov/environment/alternative\\_fuel\\_corridors/](http://www.fhwa.dot.gov/environment/alternative_fuel_corridors/)

<sup>12</sup> Notice of Lodging of Partial Consent Decree Re: Volkswagen "Clean Diesel" Marketing, Sales Practices, and Products Liability Litigation (n.d.).

<sup>13</sup> US EPA, "Clean Diesel Funding Assistance Program FY 2016 - Request for Proposals," February 2016.

<sup>14</sup> North American Council for Freight Efficiency, "Confidence Report: Idle-Reduction Solutions," June 25, 2014.

approach to solving this issue could be to create and implement building codes that require new truck stops to electrify. Other avenues to leverage inclusion of TSE in new parking builds include The National Coalition on Truck Parking (for planning new capacity), individual state freight plan updates that due in December 2017, and state and MPO truck parking studies (e.g., Boston Region Metropolitan Planning Organization, New York Metropolitan Transportation Council, North Jersey Transportation Planning Authority, Metropolitan Washington Council of Governments)

4. **Work with TSE companies and landlords to encourage adoption of a reservation system for electrified spaces, and/or spaces in general.** Some of the issues involved in recommendation 1 could be solved by instituting a reservation system at truck stops. This way electrified spaces could be reserved guaranteeing landlords that the space would indeed be filled for the evening. A system that combines smart phone apps and over the phone reservations would be ideal. Many operators along the busier routes on the east coast can search and drive for up to an hour to find a safe space to park, so instituting a reservation system would also reduce unnecessary driving times for vehicles that might still idle, which would still reduce emissions and increase public safety. The I-95 Corridor Coalition has developed a Truck Parking Availability System that could be expanded to include visibility for TSE spaces and a reservation mechanism (see <http://i95coalition.org/projects/truck-parking/>) and existing apps such as Trucker Path (<https://truckerpath.com/>) could be encouraged to include electrified space information.
5. **Encourage fleet owners to allow gas cards to be used for TSE.** By encouraging fleet owners to allow gas cards to be used to purchase electricity, one barrier to TSE use is eliminated. If the financial decision to use TSE is non-existent to the operator there are still other personal incentives to use TSE (e.g., access to Wi-Fi and television, less noise during sleep). Since electrification costs less per hour than idling does, the fleet owners stand to save a significant amount of money from use of TSE if it can be purchased through the gas card.

## *Option 2: Electric Transport Refrigeration Units (eTRU)*

### **Background**

Transport Refrigeration Units (TRUs) also called reefers present a similar avenue for idling reductions as do long-haul diesel trucks. CleanFuture estimates that there are approximately 61,000 refrigerated trailers and 51,000 tractors registered in the OTR. TRUs run on a separate system from the tractor engine so you can have two engines idling at the same time, rather than one which is typical of most tractor trailers. Since TRUs need to maintain temperatures to meet food safety regulations, conventional TRUs need to idle when food has been loaded. Typically this is about four hours per day, and a minimum one hour per day, to lower the temperature of the trailer prior to loading. But, if the TRU is loaded up with deliveries the night before, it can idle all night. TRUs consume fuel at approximately the same rate as diesel engines do.

The approach to reduce idling from TRU has been termed Electrified Transport-Refrigeration Units (eTRU). Like TSE, eTRU plug into a terminal to receive power, which allows the trailer to remain at proper temperatures without idling. Also like TSE this reduces direct emissions to zero and can reduce overall emissions to zero if the system is powered by renewables.

Infrastructure for a 480v 3-phase, high amperage eTRU outlet cost around \$5-6,000 per outlet. Costs increase if new transformers or panels are needed. New TRUs often come pre-installed with plugs needed for electrification and retrofitting a diesel-powered TRU costs between \$4-6,000.

The California Air Resources Board (CARB) has also looked at strategies to reduce use of diesel fuel to run TRUs to near-zero by 2030. Several options to accomplish this are presented in a Clean Freight Discussion and include expansion of eTRU capabilities, remote monitoring of TRUs, and further idling restrictions.<sup>15</sup>

### Challenges

Some of the challenges presented by TSE are eased for eTRU. TRUs are more typically managed at a particular distribution facility where operators directly work for the owner of the fleet and all cost savings from reduced idling at the facility are recouped by the owner of the fleet. Also unlike long-haul truckers TRU operators will frequent the same facilities (e.g., grocery stores) to make deliveries.

However, issues remain with the delivery side. Payments for electricity become more challenging when making deliveries if the facility receiving the goods is not owned by the owner of the fleet. Some type of arrangement between the facility owner and fleet owner will need to be made. Additionally, during deliveries, TRUs do not remain onsite for long periods of time and operators can forget to plug in their vehicle and switch to electricity. They may also forget to unplug and pull the electrification system out of the wall (though technologies are coming on the market to deal with this).

Awareness of systems is another challenge. eTRU is an emerging technology and many fleet owners and facilities may not be aware of it as an option, let alone the savings that are generated from its use.

Standardization of technology is another potential pitfall. If a TRU's home base has different electrification technologies than the facilities it delivers to, the electrification cannot be used when in the field negating potential emission reductions.

### Recommendations

- 1. OTC member states should work to expand eTRU in the OTR.** eTRU is a cost effective way to reduce idling emissions and save fleet owners money. Focusing on fleet's home bases should be the highest priority since they can have the most idling and there are less hurdles with issues around payment. In addition, work with partners, such as the SmartWay Transportation Partnership, to reach out to companies in the food manufacturing and distribution industry in order to demonstrate the return on investment on dock and pedestal power at warehouses, distribution centers and stores for private and for-hire. Consideration should be giving to leveraging public-private partnerships to raise seed funding or implement cost-sharing given the higher capital costs of installation at facilities and that hybrid TRUs are becoming more common.
- 2. Expansion of eTRU should be done with a consistent standard that is determined by the industry.** Having different technological standards at different facilities creates problems if fleets try to plug in with incompatible technologies. As eTRU is expanded, both at public and private facilities it should be done with a consistent technological standard.

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<sup>15</sup> California Air Resources Board, "Sustainable Freight: Pathways to Zero and Near-Zero Emissions Discussion Document," April 2015.

3. **Work to eliminate the practice of weekend/holiday storage.** Idling TRUs for an entire weekend or throughout holidays needs to be eliminated. Electrification is one solution to this issue.
4. **Follow development of CARB's eTRU regulations and consider them as a potential OTC model rule.** CARB is expected to develop draft regulations affecting TRUs later in 2017 and consideration of adopting similar measures in our states could be possible. These regulations could include requirements to remotely sense engine activity on TRUs, as well as requirements to idle as little as 5 minutes at non-retail locations and 15 minutes at retail locations. It is likely that the OTC would need to delay any deadlines found in any potential CARB regulations since industry in California has been investing in plugin and GPS tracking technologies to a greater extent already and industry in our states would need to catch up.

### *Option 3: Port Strategies*

#### **Background**

Ports are typically located near disadvantaged neighborhoods. EPA's MSTRS Ports Workgroup put together a series of recommendations to reduce emissions at port facilities, including recommendations on idling reduction, which our recommendations directly draw from.<sup>16</sup> EPA found that trucks idle outside of ports on average 20 minutes and a 10% reduction in idle time would reduce port NO<sub>x</sub> emissions by 2%.<sup>17</sup> The MSTRS recommendations are reflected in EPA's revamped Ports Initiative, which recommends idling and other emissions reduction approaches (<https://www.epa.gov/ports-initiative/best-practices-port-operations>).

#### **Recommendations**

1. **Continue progress already made to reduce queuing.** Drayage trucks often idle outside of gates. Speeding up the time to enter through automation (e.g., swipe cards, RFIDs) would help to reduce entry time. Extending gate hours would allow some drivers to enter facilities during less trafficked hours reducing time spent idling outside of gates. Developing a system to alert drivers when they are needed through text messages or a phone app would also help with this process. This recommendation can face challenges at ports that do not fall under the jurisdiction of a port authority or smaller ports. Another challenge is that this can lead to idling "creep" where idling occurs near to the port, rather than at the gate so successful strategies will also have to understand the origins, destinations, and layover locations of dray trucks.
2. **Electrify drayage trucks and nonroad equipment used at ports.** Cranes and other cargo handling equipment are also a major source of idling at ports. In addition, many drayage trucks travel short distances that can be covered under an electric charge. Developing a regional strategy for implementing technologies to reduce idling from these sources such as electrification or automatic shutoffs would reduce idling emissions.
3. **Examine approaches to conform requirements throughout the region, for ships in particular.** Placing requirements on the shipping industry that would raise the cost of entry at a particular port could leave some ships to dock at a different port given the proximity of ports on the eastern seaboard and the expansive road network that exists. In order to prevent this, the

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<sup>16</sup> US EPA, *Ports Initiative Workgroup Report: Recommendations for the U.S. EPA*, September 2016.

<sup>17</sup> Ibid.

states need to work together to ensure consistent requirements throughout the OTR and preferably to the southern eastern seaboard states as well.

4. **Partner with the Northeast Diesel Collaborative Ports Work Group.** This group has been a forum for years for sharing information on emissions reduction technologies and strategies among government and private sector participants and advancing projects.
5. **Collaborate with EPA Regions to implement the EPA Ports Initiative.** EPA's Ports Initiative<sup>18</sup> is supporting outreach to ports to encourage self-assessment and collaboration with stakeholders such as port communities using a variety of technical guides and process tools. The OTC could collaborate with EPA Regions to leverage this program for use at OTR ports to reduce idling from trucks, locomotives, TRUs, cargo handling equipment, and vessels. A pilot project is currently underway in Providence, Rhode Island and other ports in the OTR could participate in subsequent pilots as well.

### *Option 4: Locomotive Idling*

#### **Background**

Locomotive engines often idle at rail stations for passenger locomotives and locations where goods need to be unloaded or loaded such as ports for freight locomotives. In the OTC, these locations tend to be in populated areas with existing air quality problems and often in environmental justice areas. EPA found that line-haul, passenger, and switcher engines spend 38.0%, 47.4%, and 59.8% of their time idling, respectively.<sup>19</sup> While locomotive engines are idling they can burn anywhere from 3 to 50 gallons of fuel per hour depending on what tier the engine was certified to and switchers can idle up to 5,300 hours per year.<sup>20</sup> Both passenger and freight locomotives idle for many reasons, which vary by engine, duty, location, temperature, etc., so it is impossible to recommend one-size-fits-all strategies.

Massachusetts (310 CMR 7.11(2)) and Rhode Island (CRIR 45.4) have regulations banning locomotive idling in their states, and Delaware recently adopted a rule, which has been contested. South Coast Air Quality Management District (SCAQMD) also has adopted a rule recently (SCAQMD rules 3501 and 3502), which California represented it in their draft SIP, which is facing similar challenges to Delaware's.

#### **Challenges**

The Surface Transportation Board (STB), which regulates interstate rail activities, claimed that the Delaware does not have the jurisdiction to regulate idling from interstate train engines stopped within its borders. Delaware is currently suing claiming that they have the jurisdiction to regulate locomotive idling.<sup>21</sup> This issue would need to be resolved before any regulatory approach to limiting rail idling should be considered.

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<sup>18</sup> <http://www.epa.gov/ports-initiative>

<sup>19</sup> US EPA, *Locomotive Emission Standards*, Regulatory Impact Analysis, April 1998.

<sup>20</sup> US EPA, *Regulatory Impact Analysis: Control of Emissions of Air Pollution from Locomotive Engines and Marine Compression Ignition Engines Less than 30 Liters Per Cylinder*, Regulatory Impact Analysis, March 2008.

<sup>21</sup> District of Columbia Circuit, *State of Delaware v Surface Transportation Board, et al.* (n.d.).

## Recommendations

1. **Hold regional forums to improve dialog between state agencies and railroads.** OTC member state air agencies grapple with similar problems and complaints, and currently work separately with sister state departments of transportation and “offending” railroads to resolve issues. Meeting regularly to establish common knowledge and share best practices for reducing idling on a regional basis would increase states’ effectiveness and improve railroad buy-in by acknowledging their interstate/corridor perspective.
2. **Develop a strategy for cost sharing to increase idling technologies on locomotives.** Several technologies such as APUs, shore power, and automatic shut-offs lessen the need to idle while locomotives are stopped at destinations. Smaller operators in particular have challenges with the upfront capital costs associated with these investments leading to a need for cost sharing in order to implement these idling reduction technologies.
3. **Work with existing trade groups to increase outreach.** Existing groups already have direct communication with many of the owners, operators, rail yards, and other parties that we need to communicate and partner with. The focus should be on collaboration with regional groups, such as the Northeast Association of Rail Shippers<sup>22</sup>, the New England Railroad Club<sup>23</sup>, or state rail associations. National groups such as Association of American Railroads<sup>24</sup> also already have communication networks set up with the stakeholders that states need to reach. Though they have a national focus these groups have regional sub groups within their structure that can be useful.

## *Option 5: Nonroad Idling Model Rule Adoptions*

### Background

In May 2012 the OTC completed work on the nonroad idling model rule.<sup>25</sup> As of that point four of the thirteen jurisdictions in the OTR had adopted the model rule and since then the District of Columbia has also adopted the model rule. If adopted by all 13 jurisdictions, the OTC would realize approximately 6,000 to 35,000 tons of NO<sub>x</sub>, 800 to 4,400 tons of total hydrocarbon, and 4 to 25 tons of PM<sub>2.5</sub> emission reductions annually.<sup>26</sup>

### Challenges

One downside of this measure is that there are exemptions from idling restrictions on high temperature days, which are often the days when ozone reductions are needed the most. Furthermore, devices such as APUs cannot be installed in nonroad equipment as easily as in heavy-duty diesel vehicles. This will limit some of the ozone benefits from the model rule. Effectiveness of model rule could also be problematic from the enforcement perspective given the challenges that have been faced enforcing idling restrictions on onroad vehicles.

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<sup>22</sup> <http://nerailshippers.com/>

<sup>23</sup> <http://www.nerailroadclub.com/>

<sup>24</sup> <http://www.aar.org/>

<sup>25</sup> Ozone Transport Commission, “Statement of the Ozone Transport Commission on the Completion of Work on Three Model Rules,” May 24, 2012.

<sup>26</sup> Ozone Transport Commission, *OTC Model Regulations for Nitrogen Oxides (NO<sub>x</sub>) and Photo-Reactive Volatile Organic Compounds (VOCs)*, Technical Support Document, August 25, 2016.

## Recommendations

1. **OTC member states that have not adopted the model rule or already have a similar rule should do so.** Despite the challenges this model rule is cost effective since it provides an economic benefit to owners/operators while reducing pollution. Much construction equipment is used in population centers as well making the health benefits from reduced PM<sub>2.5</sub> and air toxics emissions very important.

## *Option 6: Idling Reduction Commitments*

### Background

In 2007 the OTC adopted an MOU where six member states committed to emission reductions from Electrical Generating Units (EGUs) that participate in electricity production on High Electrical Demand Days (HEDDs).<sup>27</sup> No specific policy was required to achieve the emission reductions, the reductions just needed to occur. This allowed flexibility for each state to tailor its programs to reduce emissions during HEDDs to its particular needs. Adopting a similar MOU among the states in the OTR to commit to reduce emissions from idling is a potential avenue to pursue as a regional idling reduction strategy.

### Challenges

There are differences between emission reductions from HEDD units and idling emission sources that could make this more challenging, even if you are looking at just idling of HDDVs. HEDD units often have emissions measured directly using a Continuous Emissions Monitoring System (CEMS) and even in the cases where a unit does not use CEMS, much is known about its location and emissions through other reporting mechanisms. No such information currently exists for HDDVs. The number of HEDD units is also quite small in comparison to the number of HDDVs.

In order to account for actual emission reductions it might be necessary to monitor emissions at locations (truck stops, schools, ports, etc.) throughout the state, which would be costly or make assumptions using the MOVES tool, which would be fairly unverifiable. A less costly and slightly verifiable alternative could be to have each state to get a certain level of commitment through anti-idling pledges from its industry to meet a goal agreed to by the OTC. This would only guarantee that awareness of anti-idling has increased, not that emissions have necessarily decreased.

## Recommendations

1. **OTC should not pursue commitments to specific emission reductions from idling.** The verification needed to ensure these emission reductions and develop a baseline is too problematic for this effort to be successful. However, as GPS tracking systems and other tracking technologies on vehicles become more prevalent, in particular technologies that could monitor emissions from HDDVs, this idea could be revisited.

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<sup>27</sup> Ozone Transport Commission, "Memorandum of Understanding Among the States of the Ozone Electrical Demand Day Emission Reduction Strategies into Ozone Attainment State Implementation Planning," March 2, 2007.

## *Option 7: Enforcement/Regional Governmental Body Education Efforts*

### Background

Enforcement of idling restrictions is necessary for progress to be made in reducing emissions from idling. When diesel prices are low financial incentives to reduce idling disappear and there is a status quo bias leading to idling over other newer solutions that reduce idling. In a survey of fleet owners, enforcement of idling restrictions was not considered a reason to reduce idling because enforcement was sporadic.<sup>28</sup> The state officials who enforce idling restrictions also varies from state to state (Table 1).

**Table 1: Enforcement Agencies of Anti-Idling Regulations for OTC Member States**

State	Idling Enforcement Agencies
CT	DEEP continues to target excessive idling of motor vehicles at rest areas, schools, truck stops and at commercial delivery points. DEEP field staff investigate complaints of excessive idling and pursue enforcement actions when they observe noncompliance of Connecticut's three minute idling limit. Individuals that witness excessive idling, particularly in areas with a high concentration of vehicles, are encouraged to report those observations to DEEP's air quality complaint line. Complaints are analyzed and investigated by DEEP field staff, who may pursue enforcement actions if excessive idling is observed.
DC	Department of Energy and Environment inspectors, the Metropolitan Police Department, the District Department of Transportation, and the Department of Public Works parking enforcement staff have the authority to enforce engine idling.
DE	State police and DNREC Environmental Protection Officers enforce idling under 7 DE Reg. 1145.
MA	Motor vehicle and locomotive idling enforcement occur under the authority of 310 CMR 7.11 by MASS DEP and EPA (through SIP) and under 310 CMR 7.52 by any local police, board of health officials, or building inspectors as allowed.
MD	Maryland State Police enforce idling under Section 22-402 of the Transportation Article, Annotated Code of Maryland.
ME	Idling is enforced by the State and local police departments as well as all County Sheriff's Departments.
NH	Idling regulations are set out in Env-A 1100 of the New Hampshire Code of Administrative Rules. Because Env-A 1100 is an administrative rule and not a state law, it is enforceable only by New Hampshire Department of Environmental Services (NHDES) staff. NHDES typically addresses idling issues through outreach and education.
NJ	NJDEP enforcement officers, County Health Officers, State and Local Police Officers all have the authority to enforce the New Jersey idling regulations.
NY	State Police and NYSDEC Environmental Conservation Officers generally enforce Subpart 217-3 idling restriction so heavy duty vehicles (all fuels). Local police officers may also enforce it. New York City has its own idling local law that takes precedence there since it only allows three minutes rather than five.
PA	Any law enforcement officer who is authorized to issue a summary citation in Pennsylvania and any DEP employee authorized by the Secretary of the Department of Environmental Protection. DEP inspectors may issue summary citations and notices of violation.
RI	No reply received.
VA	No reply received.
VT	Law enforcement officers in Vermont that have authority to enforce motor vehicle violations may enforce 23 V.S.A. §1110 prohibiting idling of motor vehicles under certain circumstances. VTDEC Environmental Enforcement Officers do not have this authority and therefore may not enforce Vermont's idling law.

<sup>28</sup> North American Council for Freight Efficiency, "Confidence Report: Idle-Reduction Solutions."



Emerging technologies involving GPS can also play a role in enforcement. CARB currently allows TRUs to use hybrid technologies to meet engine standards, but in order to ensure the hybrid systems are operating at the correct locations and during the proper hours, the installation of an electronic tracking system is required.<sup>29</sup> These systems can determine if the TRU is idling at a facility that has an “electric fence” installed and thus is not meeting the alternative emission standards. It is possible that these types of systems will become required for all diesel vehicles at a later date in California.

### Challenges

In many cases the environmental department either cannot enforce idling limits, or is not the only enforcer of limits. This requires other governmental bodies to participate in reducing idling, namely law enforcement and, to a lesser extent, transportation departments. This can be especially challenging when there are often clearer threats to public safety, such as speeding vehicles, which need to be acted upon. Further complicating matters are state idling exemptions of three to five minutes in anti-idling regulations which can prevent enforcement personnel from observing an idling vehicle long enough period in order to issue an infraction.

### Recommendations

1. **Develop and hold a regional workgroup that includes environmental, law enforcement, and transportation departments to learn about idling regulations.** This might be a troublesome process though given the number of stakeholders so the other option is that each state in the OTC commits to having an intrastate process instead. This has the benefit of both being a more manageable number of parties and better able to be tailored to a particular states laws/regulations. Delaware is currently developing a process that could be used as a model for either regional or state-by-state outreach.
2. **Ensure the environmental department has the authority to enforce idling restrictions.** Environmental enforcement personnel have a differing set of institutional directives governing their work than police officers or department of transportation officials. As a result enforcement by environmental department staff is preferred since idling restrictions are intended to further goals of their department. Many states in the OTR do already allow enforcement of idling restrictions by environmental department enforcement personnel, but in states that do not, it is recommended that the authority be obtained.
3. **Consider enforcing idling restrictions at electrified truck stops.** One of the major barriers to widespread truck stop electrification adoption is the lack of available spaces, which gets further exacerbated when a truck is idling in an electrified space. Enforcing idling restrictions at electrified spots will help to maintain consistency that electrified spots are available to those that want to plug in, augment the ability of truck stop managers to keep those spots available for non-idling trucks, and maybe even encourage idling trucks to switch to using electrified spaces. Ensuring electrified spaces will help regionally as more truckers become aware that they can find an open electrified spot. It should be noted that there are some safety concerns that need to be considered when evaluating this approach due to drivers needing able to take

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<sup>29</sup> California Air Resources Board, “Transport Refrigeration Units Alternative Technology Compliance Strategies- Electric Standby and Hybrid Electric Systems,” June 2013.

federally-mandated rest periods without being disturbed, and the lack of good alternatives (like TSE-equipped spaces they can find, count on and pay for) currently available.

4. **Start an electronic tracking system (ETS) case study in the OTR.** This could take on a variety of the different forms, whether requiring TRUs to have an ETS to monitor idling at delivery facilities, or requiring school busses to use ETS to monitor idling at a school, or requiring motor coaches to use ETS to monitor idling at frequent tourist stops. Since this would be a case study to demonstrate feasibility and emission reduction potential it could be successful if only a few states took this approach.
5. **Turn sticks into carrots.** States individually or collectively could have a program to reward drivers found not to be idling similar to a program Maryland has done.<sup>30</sup> Regionally we could also encourage larger fleet owners to institute their own idling reduction award program or bonuses.

### *Option 8: Regional Owner/Operator Education Efforts*

#### **Background**

Education of owner/operators is important to reduce idling. Many owners/operators are not even aware of some of the available technologies and the cost savings associated with them. Lack of knowledge of a particular type of technology can range from 20-60%, and additionally, there can be high levels dissatisfaction with a technology based on past experiences with older technologies that needs to be overcome in the trucking community as well.<sup>31</sup>

#### **Challenges**

One of the major challenges is the large number of operators that could benefit from education, especially when it comes to independent owner/operators. Additionally, education only gets you so far. It needs to be backed up with enforcement and technology costs that are not prohibitive for owners to implement.

#### **Recommendations**

1. **Focus education on the issues that affect owners/operators.** While reducing idling is important for reducing air pollution, owners and operators are going to be more persuaded when they learn about the cost savings (both short-term from fuel savings and long-term from engine wear) that they can expect from reducing idling. Concerns about reliability and durability of equipment, and ease of installation or use are also important. Referring to efforts as idling reducing rather than a more negative anti-idling is also helpful.<sup>32</sup>
2. **Rely on existing materials for education efforts if they aren't state specific.** Tool kits such as EPA's SmartWay Transportation Partnership's strategies and technologies, and to a lesser extent IdleBox,<sup>33</sup> provide existing materials that have been used on a larger scale and can be used to

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<sup>30</sup> Ozone Transport Commission, *Overview of Efforts to Reduce Idling in the Ozone Transport Region*.

<sup>31</sup> North American Council for Freight Efficiency, "Confidence Report: Idle-Reduction Solutions."

<sup>32</sup> Ibid.

<sup>33</sup> US Department of Energy, "IdleBox Toolkit," n.d., <https://cleancities.energy.gov/technical-assistance/idlebox/>.

augment already existing state education efforts at no additional cost. Additional materials that states have independently developed in the region have also been compiled by OTC and can be relied upon.<sup>34</sup> There is little to be gained by using state resources to develop educational materials when well tested materials already exist.

3. **Work with existing trade groups to increase outreach.** Existing groups already have direct communication with many of the drivers, owners, truck stop managers that we need to communicate and partner with. The focus should be on collaboration with regional groups, such as the I-95 Corridor Coalition<sup>35</sup>, or state trucking associations. National groups such as Owner-Operator Independent Drivers Association (OOIDA)<sup>36</sup>, American Trucking Associations (ATA)<sup>37</sup>, and the National Association of Truck Stop Owners (NATSO)<sup>38</sup> also already have communication networks set up with the stakeholders that states need to reach. Though they have a national focus these groups have regional sub groups within their structure that can be useful. Also, national outreach might be beneficial if upwind Regional Planning Organizations collaborate on these efforts. Finally, OOIDA in particular has an education arm that could be a way to directly educate owners and operators about idling reduction benefits.
4. **Increase communications on media that owners/operator use.** Many of the organizations discussed above have newsletters and websites that the trucking community already reads. Also, bulletin boards at truck stops are a good source for spreading information and coordination of that type of distribution could potentially be done through a group like NATSO. Additionally, American Transportation Research Institute (ATRI)<sup>39</sup> has become a frequently used source concerning environmental regulations that impact truck drivers and could be potentially be leveraged to communicate other information. Also national media such as trucker specific satellite radio, to Land Line Magazine<sup>40</sup>, to the Trucker's Friend atlas that the trucking community already relies upon could be beneficial if we begin collaborating with upwind Regional Planning Organizations (RPOs) or want to have better reach into the population of through truckers. Another good list of magazines read by truck operators is located here: <https://www.fueloyal.com/10-best-trucker-magazines-in-us/>. Social media outlets should also be considered as well. As more media sources are discovered we also recommend working with OTC to keep an up to date list available for states to rely upon.
5. **Keep outreach continuous.** Long-haul truck driving is a field with high turnover both within companies and in the field itself. As a result, the operators that were educated in any given year may not be the same population of operators several years later. To deal with this problem education and outreach must be maintained.

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<sup>34</sup> Ozone Transport Commission, *Overview of Efforts to Reduce Idling in the Ozone Transport Region*.

<sup>35</sup> <http://i95coalition.org/>

<sup>36</sup> <http://www.ooida.com/>

<sup>37</sup> <http://trucking.org>

<sup>38</sup> <http://natso.com>

<sup>39</sup> <http://atri-online.org/>

<sup>40</sup> <http://www.landlinemag.com/>