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Port Operational Strategies: Gate Management

This fact sheet is one of a series of documents produced by the EPA Ports Initiative to inform port stakeholders about potential emission reduction strategies.[1] Each fact sheet contains basic information about the strategy, emission impacts, cost components, and example programs. While each strategy can achieve benefits on its own, implementing them together could create synergies.[2]

Strategy Summary

Description: Gate management strategies reduce idle emissions at terminal gates (Figure 1) and inside freight yards by redistributing drayage activity at ports, shifting truck arrivals away from peak periods and lowering average wait times at the gates. Well-designed programs can also improve coordination of freight transfer activities within the port, decreasing truck turn times and improving overall terminal efficiency.

Figure 1. Port Terminal Gate[3]

Various strategies have been tested and fine-tuned over several years at many ports, including Los Angeles, Long Beach, New York/New Jersey, Baltimore, Savannah, New Orleans, and Oakland. These strategies continue to evolve, incorporating the latest advances in Port Management Information Systems (PMIS) and technologies.[4]

Ports have adopted three main types of gate management strategies: truck appointment systems, extended hours of operation, and automated gate systems.

Truck appointment systems: These systems are used to reserve specific timeslots for drayage truck arrivals. Reservations are made in advance, either by computer or phone, for timeslots typically an hour in length.[5] A driver missing a reservation may incur a fine and may be required to reschedule. For example, the Port of Vancouver's scheduling program charges drivers $50 for missed appointments, but

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1 The emissions evaluated in these fact sheets include nitrogen oxides (NO_x), particulate matter (PM), hydrocarbons (HC), carbon monoxide (CO), carbon dioxide (CO_2), and sulfur dioxide (SO_2).

2 See the Ports Initiative's fact sheets on port management information systems (https://www.epa.gov/ports-initiative/management-information-systems-improve-operational-efficiencies-and-air-quality), virtual vessel arrival (https://www.epa.gov/ports-initiative/virtual-vessel-arrival-systems-ports-improves-air-quality-and-saves-fuel), and vessel speed reduction (https://www.epa.gov/ports-initiative/marine-vessel-speed-reduction-reduces-air-emissions-and-fuel-usage).

3 Port of Los Angeles. 2019. Clean Truck Program. https://www.portoflosangeles.org/environment/air-quality/clean-truck-program. Accessed 3-5-2021.

4 U.S. Environmental Protection Agency. 2020. Port Operational Strategies: Port Management Information Systems. [https://www.epa.gov/ports-initiative/management-information-systems-improve-operational-efficiencies-and-air-quality.

5 Maguire, A. 2010. Relieving Congestion at Intermodal Marine Container Terminals: Review of Tactical/Operational Strategies. Center for Intermodal Freight Transportation Studies, University of Memphis. https://ageconsearch.umn.edu/bitstream/207280/2/2010_161_Relieving_Congestion_Marine_Terminals_Strategies.pdf. Accessed 3-5-2021.

also requires terminal operators to compensate drivers for long turn times.[6] Appointment systems can be integrated within a port's or terminal operator's overall terminal operating system (TOS), or PMIS, to take advantage of other opportunities, such as more accurate forecasting of yard labor needs. A TOS controls the movement and storage of various types of cargo in and around a container terminal. A PMIS enables port operators to manage the processes for the ship's arrival and departure, and to supervise traffic within the port basin. PMIS is also accessible to port community operators such as harbor masters, coastguards, agents, and terminal operators.

- ***Extended hours of operation:*** By extending gate hours, drivers and drayage companies may be able to schedule arrivals during off-peak times, thereby avoiding road congestion, long queues, and pickup/drop-off delays. Extending hours also spreads truck traffic over a longer time, reducing peak period activity. Effective extended hour programs may include incentives for truckers to schedule off-peak arrivals, additional gate and terminal staffing, and effective terminal management to ensure that all required port services are modified for night and weekend operation as needed.[7] Extended hours can be coupled with truck appointment systems for even more flexibility and efficiency.
- ***Automated gate systems:*** These systems use a range of technologies to improve communication between the terminal gate and freight yard. Typically integrated within a port's TOS, these systems automatically identify trucks and containers and facilitate access, loading, and unloading for drayage trucks entering the terminal gate.

  Automated gate system technologies include:

  - *Bar code reader systems,* which use bar code labels and laser scanners to identify and track containers at gates and within the terminal.
  - *Optical character recognition (OCR) systems,* which use cameras and scanners to identify containers, chassis information, and truck license plates upon entry and exit. OCR systems may be easier to install and maintain than technologies that require tag application or receiver installation, since their scanners can read existing markings and identification placards.[8]
  - *Radio frequency identification (RFID) systems,* which use tags attached to containers and trucks that transmit information to RFID readers via radio signal.
  - *Real-time location systems (RTLS*), which use wireless tags on trucks and containers to track their position relative to fixed receiving points.
  - *Closed circuit television,* which uses strategically positioned gate and terminal cameras to assess real-time gate and yard conditions.
  - *Differential Global Positioning System (DGPS),* which uses satellite-based navigation to transmit truck and container location coordinates. This requires DGPS receivers on target units.

  Some automated gate systems integrate multiple strategies. For example, the U.S. Department of Transportation's Freight Advanced Traveler Information System (FRATIS) combines automated gate

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6 Mongelluzzo, B. 2018. Vancouver Changes Designed to Prevent Congestion, Dray Delays. https://www.joc.com/port-news/international-ports/vancouver-changes-designed-prevent-congestion-drayage-related-delays_20180524.html. Accessed 3-5-2021.

7 Maguire, A. 2010. Relieving Congestion at Intermodal Marine Container Terminals: Review of Tactical/Operational Strategies. Center for Intermodal Freight Transportation Studies, University of Memphis. https://ageconsearch.umn.edu/bitstream/207280/2/2010_161_Relieving_Congestion_Marine_Terminals_Strategies.pdf. Accessed 3-5-2021.

8 Port Strategy. 2013. OCR Grabs the World. http://www.portstrategy.com/news101/port-operations/planning-and-design/ocr-grabs-the-world. Accessed 3-5-2021.

technologies with a dynamic appointment system to streamline drayage activities.[9] FRATIS provides up-to-date information to drayage drivers so they can make more efficient decisions about routing, pickup and drop-off, shift scheduling, and mandatory rest periods. These systems electronically inform the driver using cellular applications about highway traffic, port queue times, and congestion. They also allow for more efficient matching of pickups and drop-offs because port operators can see the location of approaching trucks and match them to containers waiting for pickup.[10]

Advantages: Gate management strategies can decrease emissions at terminal gates and inside the port, which can improve the health of port workers and nearby communities.[11] Spreading truck arrivals over a longer period reduces vehicle queues, minimizes gate traffic variability, and decreases local roadway congestion. In some cases, gate management strategies may also reduce idle emissions in surrounding neighborhoods where trucks wait to enter port property.

When combined with port management information systems,[12] appointments and automated gate systems can help coordinate truck and container arrival and storage, reduce container repositioning, and allow for pre-staging before pickup. Enhanced information systems can also reduce the number of empty backhauls and bobtail trips. The resulting efficiency improvements benefit truckers and port operators alike. Extended gate hours coupled with improved throughput can also expand terminal capacity, potentially allowing ports to better serve next-generation megaships.

As noted above, extended hour programs can effectively shift truck activity to off-peak periods given adequate resources. For example, the OffPeak program—initiated in 2005 by PierPASS at the Ports of Los Angeles and Long Beach—offers 35 hours of additional off-peak gate access per week, almost doubling total gate hours and shifting about half of truck activity away from peak periods. The program has moved over 35 million container shipments to off-peak periods since its inception.[13]

Adopting gate management strategies can also alleviate local road congestion by reducing peak period traffic volumes, that can also limit peak emission concentrations. Improvements in facility throughput may reduce vehicle dwell times, thereby further reducing total emissions and noise from engine idling. Real-time information on local road conditions collected as part of truck appointment systems, including video feeds, can also be shared with the public via port websites.

Considerations: Effective truck appointment systems require adherence to scheduled appointment times by all parties, including trucking companies and drivers, terminal operators, shippers, and vessel operators. Challenges include vessel delays due to weather or port congestion, as well as traffic congestion delaying truck arrivals. Even if a container is at the port and the truck arrives on time, backups at container sorting and stacking areas can cause significant delays once inside the terminal, potentially negating the benefits of

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9 U.S. Department of Transportation. n.d. Freight Advanced Traveler Information System (FRATIS). https://www.its.dot.gov/research_archives/dma/bundle/fratis_plan.htm. Accessed 3-5-2021.

10 U.S. Department of Transportation. n.d. Using Freight Advanced Traveler Information Systems to Promote Urban Freight Mobility. Presentation by Randy Butler. https://ftp.dot.state.tx.us/pub/txdot-info/freight/meetings/fratis.pdf. Accessed 3-5-2021.

11 Exposure to air pollution associated with emissions from diesel engines can contribute to significant health problems—including premature mortality, increased hospital admissions for heart and lung disease, increased cancer risk, and increased respiratory symptoms—especially for children, the elderly, outdoor workers, and other sensitive populations. (See U.S. Environmental Protection Agency. 2014. Near Roadway Air Pollution and Health: Frequently Asked Questions. https://nepis.epa.gov/Exe/ZyPDF.cgi/P100NFFD.PDF?Dockey=P100NFFD.PDF. Accessed 3-5-2021.)

12 U.S. Environmental Protection Agency. 2020. Port Operational Strategies: Port Management Information Systems. https://www.epa.gov/ports-initiative/management-information-systems-improve-operational-efficiencies-and-air-quality.

13 PierPASS. n.d. About. https://www.pierpass.org/about/. Accessed 3-5-2021.

scheduled arrival times. Methods are available to help mitigate these difficulties, including dedicated lanes for trucks, preferential access for appointments when wait times exceed certain limits,[14] and waiting lots for trucks.[15] While extended gate hours reduce queuing and on-dock time, the expanded terminal capacity may increase overall throughput and emissions, reducing health benefits.

If implemented as a stand-alone measure, gate appointments may simply move truck delays from one time and place to another. For example, one analysis of scheduling at the Ports of Los Angeles and Long Beach[16] found no net improvement in turnaround efficiency, most likely because the original program was based on gate appointments rather than appointments for loading and unloading at the terminal. However, with advanced coordination to pre-stage containers, these systems can ensure efficient and timely truck entry, pickup and drop-off, and exit.

Concerns associated with extended operation hours include the additional labor needed to staff the terminals and gates, as well as contract restrictions on off-peak labor. Also, extended gate hours at the port should be coordinated with off-port destination facilities to minimize overall truck trip idling. Extended hours may also be a concern to surrounding communities due to increased traffic during off-peak hours and may be restricted by noise or other local ordinances. Ports should seek community input when designing and implementing gate management strategies.

Automated gate systems must be compatible with each port's TOS framework. The technologies used have limitations including occasional malfunction, misreading of images/ID codes, and transmission signal range limits and interruptions. These issues are generally well understood and can be managed through proper system design and application, backup, and/or redundancy.

Appropriate port size and type: Gate management strategies can be adopted by ports of any size. Applicability to individual ports may vary due to differences in port management systems and operations. Larger ports with more complex operations may find the most value in automated gate technologies, especially when combined with comprehensive and sophisticated TOS frameworks. Truck appointment systems can also be applied widely, although these systems may be limited by a terminal's capacity for onsite truck processing and throughput.

[14] Maguire, A. 2010. Relieving Congestion at Intermodal Marine Container Terminals: Review of Tactical/Operational Strategies. Center for Intermodal Freight Transportation Studies, University of Memphis. https://ageconsearch.umn.edu/bitstream/207280/2/2010_161_Relieving_Congestion_Marine_Terminals_Strategies.pdf. Accessed 3-5-2021.

[15] Intelligent Transportation Systems Joint Program Office. 2019. ITS MARAD Truck Staging. https://www.fhwa.dot.gov/Planning/freight_planning/talking_freight/march_2019/talkingfreight3_20_19.pdf. Accessed 3-5-2021.

[16] Giuliano, G., and O'Brien, T. 2007. Reducing Port-Related Truck Emissions: The Terminal Gate Appointment System at the Ports of Los Angeles and Long Beach. Transportation Research Part D: Transport and Environment 12(7): 460–473. doi: 10.1016/j.trd.2007.06.004. https://www.researchgate.net/publication/222820125_Reducing_port-related_truck_emissions_The_terminal_gate_appointment_system_at_the_Ports_of_Los_Angeles_and_Long_Beach. Accessed 3-5-2021.

Emission Reductions[17]

Primary Pollutants affected: NO_x, PM, HC, CO, and CO_2

Anticipated reductions: Truck idling can contribute significantly to total port emissions. For example, drayage truck activity was responsible for 6.8 percent of NO_x emissions, 12.9 percent of $PM_{2.5}$ emissions, and 11.5 percent of CO_2 emissions at the Port of Houston's Barbour's Cut Container Terminal in 2013.[18] Based on an analysis of Port of Houston drayage truck activity, these trucks spent about two-thirds of their time idling while at the port.[19, 20] Using emission rates from EPA's MOVES model, idle emissions alone were estimated to account for 5.0 percent of the container terminal's total NO_x emissions, 11.9 percent of $PM_{2.5}$ emissions, and 7.7 percent of CO_2 emissions.[21]

When combined with other integrated strategies,[22] gate management strategies can substantially decrease truck wait times and idle emissions. The emission reduction potential varies depending on the strategies chosen, the amount of truck idling reduced, and the emission rates of the drayage trucks (determined largely by engine model year).

Further reductions may occur as a result of fewer container rearrangements within the yard and decreased road congestion outside the port. On the other hand, extending hours may generate additional emissions from power generation associated with fixed infrastructure (lighting, HVAC, etc.) and any electric-powered mobile units (forklifts, yard hostlers, etc.). These additional emission impacts are difficult to estimate and are not included in the following calculation.

Calculation methodology: The inputs required to calculate the emission reductions from gate management strategies are listed below. This approach is limited to estimating truck idle emission reductions at gate queues and on port property.

- Annual truck volume (trucks/year) for analysis year
- Average turn time before strategy adoption (hours/truck), from port data for a typical year
- Average turn time for analysis year (hours/truck), from port data[23]
- Average drayage fleet model year, from gate surveys or other port records
- Heavy-duty truck idle exhaust emission factors (grams/hour), from EPA or CARB emission models, or EPA defaults—see Table 1 for diesel and natural gas emission factors

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[17] The information in this section is for illustration: although the types of inputs and methods used in this section are generally consistent with EPA established methodologies, it does not constitute official EPA technical guidance for regulatory purposes. Please note that EPA has comprehensive guidance on developing inventories of emissions from ports and port-related goods movement. EPA's *Port Emissions Inventory Guidance*, September 2020, EPA-420-B-20-046, is available at EPA's web site at: www.epa.gov/state-and-local-transportation/port-emissions-inventory-guidance. Accessed 3-5-2021.

[18] In-terminal emission estimates from Eastern Research Group, Inc. 2017. 2013 Goods Movement Air Emissions Inventory at the Port of Houston. Available from the Port of Houston Authority upon request.

[19] Eastern Research Group, Inc. 2012. Data Collection of Drayage Trucks in Houston/Galveston Port Area: Final Report. Prepared for U.S. Environmental Protection Agency.

[20] The two-thirds estimate is based on analysis from an earlier report and idling time might be lower for 2013 because of operational improvements made at Barbours Cut in that year.

[21] U.S. Environmental Protection Agency. n.d. Motor Vehicle Emission Simulator (MOVES). Version 2014a. https://www.epa.gov/moves. Accessed Data Collection of Drayage Trucks in Houston/Galveston Port Area.

[22] https://www.epa.gov/ports-initiative/marine-vessel-speed-reduction-reduces-air-emissions-and-fuel-usage, https://www.epa.gov/ports-initiative/virtual-vessel-arrival-systems-ports-improves-air-quality-and-saves-fuel, https://www.epa.gov/ports-initiative/management-information-systems-improve-operational-efficiencies-and-air-quality.

[23] This approach assumes that decreased turn times are associated with reduced truck idling. Adjustments to the emission reduction calculation may be needed for ports with truck waiting areas inside and outside the terminals.

Table 1. Default Heavy-Duty Vehicle Idle Emission Rates (Grams/Hour)[24]

Model Year Group	NO_x	$PM_{2.5}$	CO_2[25]
Diesel[26]			
Pre-1991	148.64	3.95	8,302
1991–1993	139.75	3.95	8,329
1994–1997	139.75	6.04	8,382
1998	117.34	5.77	8,420
1999–2002	154.80	5.77	8,420
2003–2006	56.94	5.22	8,426
2007–2009	53.19	0.21	8,435
2010–2012	10.05	0.20	8,439
2013–2016	8.96	0.18	8,255
2017+	6.49	0.12	7,944
2019 national average age distribution[27]	*64.12*	*2.44*	*8,320*
Natural Gas[28]			
Pre-1992	13.87	2.107	8,342
1992–1994	13.87	2.107	8,384
1995–2000	13.87	2.107	8,447
2001	13.87	1.596	8,447
2002–2005	22.15	0.080	7,103
2006	22.15	0.061	7,103
2007–2010	5.32	0.025	7,103
2011–2012	5.32	0.021	7,103
2013	5.32	0.019	7,103
2014	5.32	0.019	6,900
2015–2016	2.88	0.017	6,900
2017+	2.88	0.011	6,692
2019 national average age distribution[29]	*8.30*	*0.322*	*7,168*

Use the following equation to calculate emission reductions for gate management strategies:

$$ER_i = \sum_1^k (TRKPYk \times (TURN1 - TURN2) \times IDLEFik) \times C$$

Where:

ER_i = Emission reduction for pollutant *i* (tons/year)
$TRKPY_k$ = Annual truck volume for model year group *k* for analysis year (trucks/year)
TURN1 = Average turn time before strategy adoption (hours/truck)
TURN2 = Average turn time for after strategy adoption (hours/truck)
$IDLEF_{i\,k}$ = Idle emission factor for pollutant *i* and model year group *k* (grams/hour)
C = Unit conversion factor, grams to tons (1.10231×10^{-6} tons/gram)

This equation assumes that savings in turn time is associated with reduced idling, however, this may not always be the case depending on operational practices at a port. If model year information is not available,

[24] Values for short-duration idle (< 60 minutes of consecutive idling) for calendar year 2019 using EPA's MOVES2014b: U.S. Environmental Protection Agency. n.d. Motor Vehicle Emission Simulator (MOVES). Version 2014b. https://www.epa.gov/moves. Accessed 3-5-2021.

[25] CO_2 values are averages over the calendar year range.

[26] For Class 8b trucks.

[27] MOVES2014b, 2019 national-level calendar year run for Class 8b diesel trucks.

[28] For urban transit buses, assumed similar to Class 8b natural gas truck idle emission rates. MOVES does not model emissions for heavy natural gas trucks.

[29] MOVES2014b, 2019 national-level calendar year run for urban transit buses.

the emission factors associated with the 2019 national average truck model year distribution can be used without summing across model year groups. However, given the large variation in emission rates, using truck model year distributions specific to the port of interest will result in more accurate emission reduction estimates reflecting local port data.

Example calculation: A port with an annual average drayage truck volume of 300,000 and an average turn time of 1.5 hours implements a gate management strategy lowering turnarounds to 0.8 hours. The model year of the drayage truck fleet is unknown.

ER_{NOx} = (300,000 trucks/year × (1.5 hours/truck – 0.8 hours/truck) × 64.12 g NO_x/hour) × 1.10231×10^{-6} tons/gram

ER_{NOx} = 14.8 tons per year of NO_x reduction

Cost Components[30]

Capital costs: Upfront investments can include labor associated with installation and system integration. Equipment and software needs can include:

- Scanners, tags, cameras, and/or receivers for each gate and terminal
- Commercial scheduling software for truck appointment systems
- Mobile app for communicating pickup and drop-off times to truckers and terminal dispatchers
- Real-time cameras to collect footage of terminal gate activity to assist truckers

Capital costs should be annualized over the expected lifetime of the equipment and software to estimate annual costs of the gate management system.

Operational costs: Costs associated with day-to-day operation of the systems include:

- Maintenance of equipment
- Updates to software
- Electricity to operate the system
- Labor for system administration (including additional gate and terminal shifts for extended hours), data compilation, and analysis

Cost savings: Cost savings may be realized from multiple sources:

- Drayage truck fuel savings from reduced idling
- Labor cost savings from quicker drayage truck turn times
- Reduced demurrage fees from quicker drayage truck turn times
- Reduced truck idling fines (in relevant jurisdictions)[31]

Some ports have implemented fees to encourage off-hour visits and to help defray the cost of gate management systems. For example, the OffPeak program charges cargo owners container drayage fees of $72.09 for each 20-foot container and $144.14 for each 40-foot container during regular operating hours (3:00 a.m. to 6:00 p.m. Monday through Friday). This revenue helps cover the cost of the extended

[30] The information in this section is for illustration: it does not constitute official EPA technical guidance for regulatory assessments.

[31] For example, California Assembly Bill 2650 (implemented in 2003) imposed fees on terminal operators at the Ports of Los Angeles, Long Beach, and Oakland for trucks idling more 30 minutes while waiting to enter terminal gates. However, the $250 per incident fee could be waived for ports extending their gate hours (to 70 hours per week for Los Angeles and Long Beach and 65 hours per week for Oakland), or implementing truck appointment systems. See Maguire, A. 2010. Relieving Congestion at Intermodal Marine Container Terminals: Review of Tactical/Operational Strategies. Center for Intermodal Freight Transportation Studies, University of Memphis. https://ageconsearch.umn.edu/bitstream/207280/2/2010_161_Relieving_Congestion_Marine_Terminals_Strategies.pdf. Accessed 3-5-2021.

operating hours. In 2016, the incremental cost of off-peak gate operation was $83 per 20-foot equivalent unit, with the revenue shortfall covered by terminal operators.[32]

Example Programs

The following examples illustrate a variety of gate management strategies currently used by ports.

Figure 2. Drayage Trucks on a City Street[33]

- Global Container Terminals USA (GCT) has implemented an advanced truck appointment system at its Bayonne terminal at the Port of New York and New Jersey. It is the first East Coast facility to introduce a truck appointment system. Leveraging the design, technology, and process improvements from its recent berth and landside modernization, GCT further upgraded the terminal's yard and gate complex to accommodate a truck appointment system to reduce truck idling and local roadway congestion (Figure 2) during peak hours. A phased implementation was completed in early November 2017, with truck reservation hours extended from 6:00 a.m. to 1:00 p.m. each weekday.

  The system provides predictability and increased efficiency for truckers through shorter and more consistent turn times, resulting in over $5 million in fuel cost savings in 2017 alone. Other benefits include priority scheduling and the ability to meter truck entrances to manage traffic within the terminal.

  GCT, the Sustainable Terminal Services (STS) Group, and the Council for Port Performance developed the appointment system through a multi-year collaboration. Composed of the six container terminal operators in the port, STS provided funding, collaborated with stakeholders, and owns the appointment system. GCT Bayonne (the first terminal to implement the system) estimates that drayage truck turn times during appointment hours have improved more than 40 percent since the program's introduction, while turn times of trucks outside the mandatory reservation window have simultaneously improved. To date, more than 70 percent of GCT Bayonne's truck transactions have appointments, with more than 90 percent of the reservations kept.

  GCT estimates the following emission reductions for 2017: CO_2 reduction of 23,149 tons/year, other air pollutant reductions of 67 tons/year, and fuel cost savings of $5.3 million/year. Its success with the appointment system was largely due to the phased approach to implementation, which gave each party time to learn the system and help shape its structure. Meanwhile, the strong outreach program made sure that trucking stakeholders were listened to and engaged, allowing GCT to learn from and incorporate feedback, introduce enhancements, and improve the flexibility of the system.[34]

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[32] PierPASS. n.d. OffPeak Frequently Asked Questions. https://www.pierpass.org/about/offpeak-frequently-asked-questions/. Accessed 3-5-2021.

[33] U.S. Environmental Protection Agency. 2018. GCT Bayonne's Drayage Truck Appointment System. https://www.epa.gov/ports-initiative/gct-bayonnes-drayage-truck-appointment-system. Accessed 3-5-2021.

[34] U.S. Environmental Protection Agency. 2018. GCT Bayonne's Drayage Truck Appointment System. https://www.epa.gov/ports-initiative/gct-bayonnes-drayage-truck-appointment-system. Accessed 3-5-2021.

Other gate management programs include the following:

- The Port of Baltimore adopted an automated gate system, resulting in significantly better truck turn times. The system uses OCR at its Seagirt terminal, reducing outbound truck processing time by 50 percent and average truck transaction times from two minutes to 45 seconds. These improvements led to a reduction of 13,000 hours in truck idling time per year and an associated decrease of 2.1 tons of NO_x and 0.1 ton of PM emissions in 2010.[35] Other strategies implemented include a weigh-in-motion scale and a color-coded online priority dispatch tool.
- SSA Marine—the largest terminal operator at the Port of Oakland, moving about 70 percent of the port's containerized cargo—recently made its extended gate hours permanent, from 6:00 p.m. to 3:00 a.m. Monday through Thursday. Initial data indicate that average truck turn times have been reduced from 96 minutes in August 2016 to 77 minutes in December 2019.[36] The Port of Oakland also offers an appointment system for cargo pickup, designates off-port locations for conducting transactions, offers a mobile app for communicating pickup and drop-off times to truckers and terminal dispatchers, and provides real-time camera footage of terminal gate activity to assist truckers.[37]
- The Port of New Orleans employs an automated gate management system that incorporates technologies including digital cameras, OCR, and transponders as well as a gate appointment system. Gate appointments are made online, reducing the time drivers spend filling out paperwork at the terminal. Drivers are allowed a 30-minute appointment arrival window, which enables effective management of truck queues associated with their arrivals. The system has reduced truck idling at gates and increased terminal efficiency through improved cooperation between trucking companies and terminal operators.[38]
- The Georgia Ports Authority (GPA) has implemented an online appointment system called WebAccess as well as adding more gates, lanes and gantry cranes. The net impact of all improvements, including the introduction of WebAccess, allowed GPA to increase total gate volume by 26% between 2014 and 2019 with no increase in average turn times.[39]

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[35] Sheckells, R. n.d. Port of Baltimore GreenPort Initiatives. Presented at Harbors, Navigation & Environment Seminar and GreenPort Americas 2010, May 5, 2010. http://aapa.files.cms-plus.com/SeminarPresentations/2010Seminars/10HNEGreenports/Sheckells_Rick.pdf. Accessed 3-5-2020.

[36] Mongelluzzo, B. 2016. Oakland Terminal Operator Makes Extended Gate Hours Permanent. https://www.joc.com/port-news/us-ports/port-oakland/oakland-terminal-operator-makes-extended-gate-hours-permanent_20160920.html. Accessed 3-5-2021. (For 2020 data, see http://portofoakland.emodal.com/HistoricalTruckTurnTime. Accessed 3-5-2021.)

[37] Port of Oakland. 2017. Port of Oakland Marine Terminal Night Gate Breakthrough Hailed. https://www.portofoakland.com/press-releases/port-oakland-marine-terminal-night-gate-breakthrough-hailed/. Accessed 3-5-2021.

[38] Bonney, J. 2017. New Orleans, Mobile Quietly Pioneer Truck Appointments. https://www.joc.com/trucking-logistics/drayage/new-orleans-mobile-quietly-pioneer-truck-appointments_20170202.html. Accessed 3-5-2021.

[39] Personal communication with Carl Pitts, Director of Container Operations, Georgia Ports Authority, 9-25-2020.