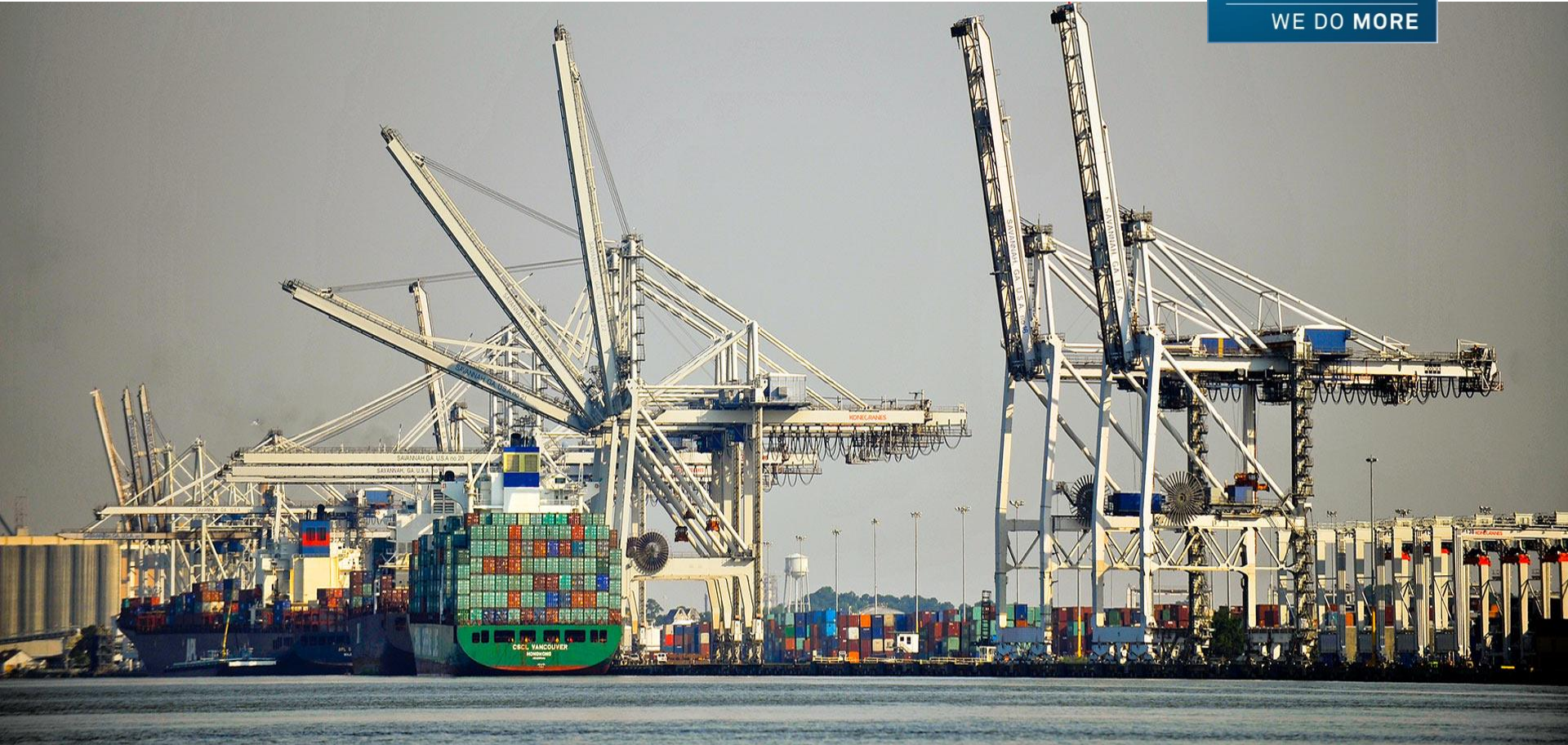
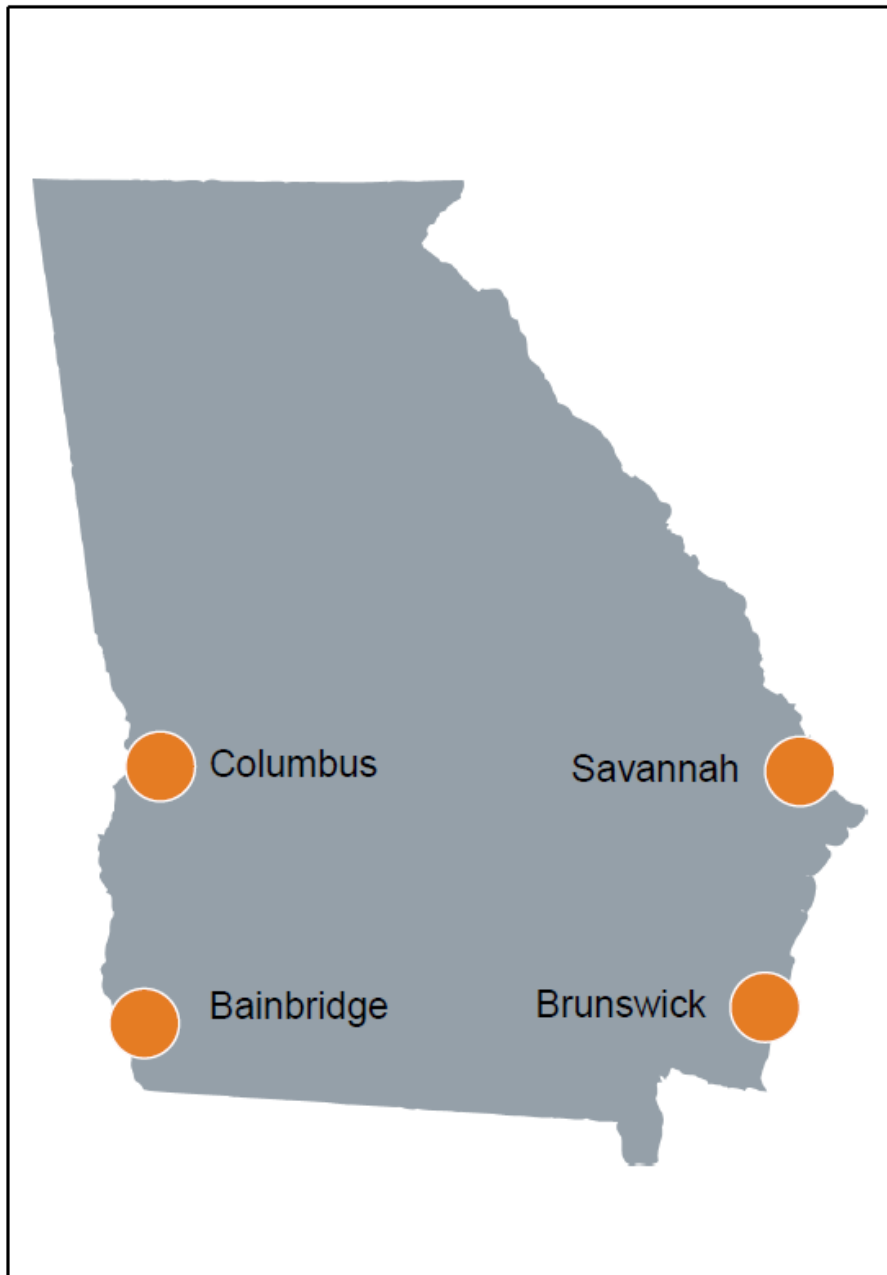


# American Association of Port Authorities Facilities Engineering Seminar Electric Rubber Tired Gantry Program



Christopher B. Novack, P.E.  
GPA Director of Engineering and Facilities Maintenance  
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# PORTS ACROSS GEORGIA

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## Savannah

- Garden City Terminal
- Ocean Terminal

## Brunswick

- Mayor's Point Terminal
- Colonel's Island Terminal

## Bainbridge

## Columbus





Savannah River

- Dedicated Container Facility
- Terminal Area:  
1,200 acres
- Berthing: 9 berths  
Totaling a contiguous  
9,693 feet
- Covered Storage:  
1,192,166 sq. ft.
- 22 container cranes  
w/4 arriving next year
- 146 RTGs
- 2 on-terminal rail

## Garden City Terminal

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Decisions for the port of Savannah are electric to the future are huge commitment





**Decisions of the past can haunt us in the future**

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Savannah River

**Decisions of the past can haunt us in the future**

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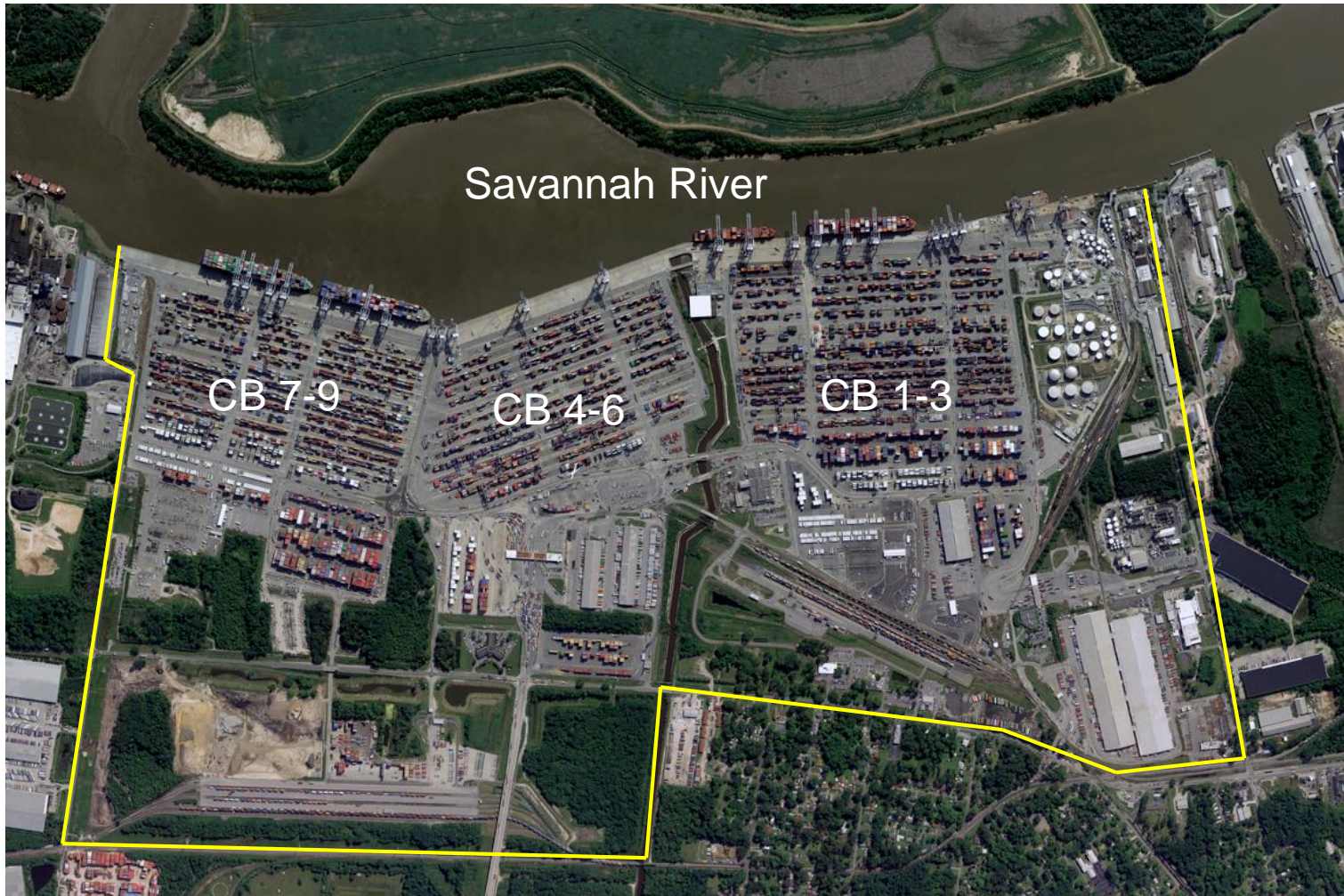


**Decisions of the past can haunt us in the future**

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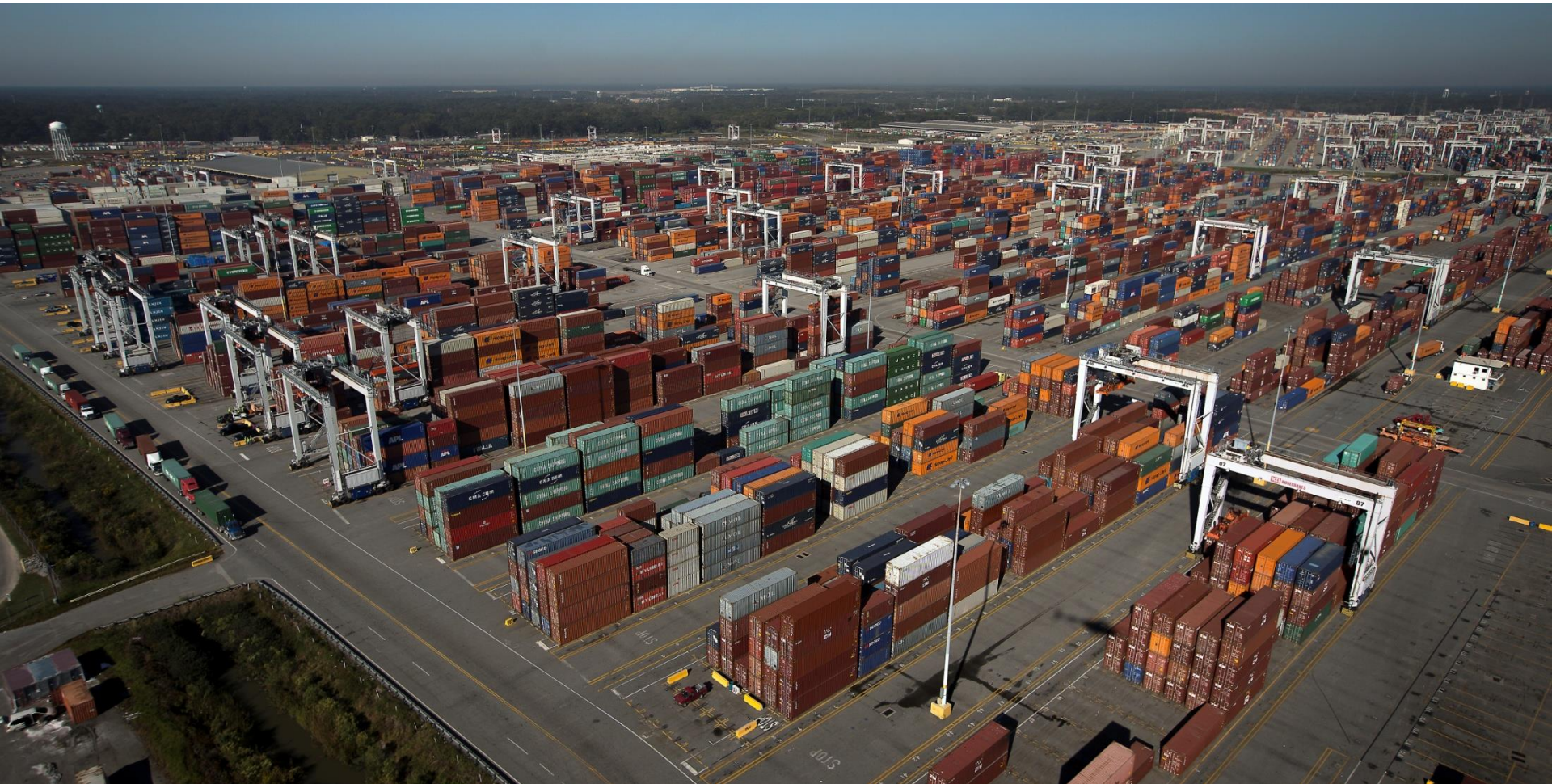
# Electric Rubber Tired Gantry Crane Program





# Electric Rubber Tired Gantry Crane Program

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# Electric Rubber Tired Gantry Crane Program

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Four basic questions require answers in order to proceed with full transition from diesel to electric RTGs

1. Electric RTGs have operated for years in other parts of the world. Can this technology be applied at GPA?
2. What system can be implemented that minimally impacts GPA's operational efficiencies?
3. What is the Return on Investment when considering the high capital commitment vs the fuel and maintenance savings?
4. How can the construction program be implemented smoothly over a 1,200 acre, operating container terminal?



# Electric Rubber Tired Gantry Crane Program

Electric RTGs have operated for years in other parts of the world. Can this technology be applied at GPA? ✓

Answer: Travel to China to view several solutions

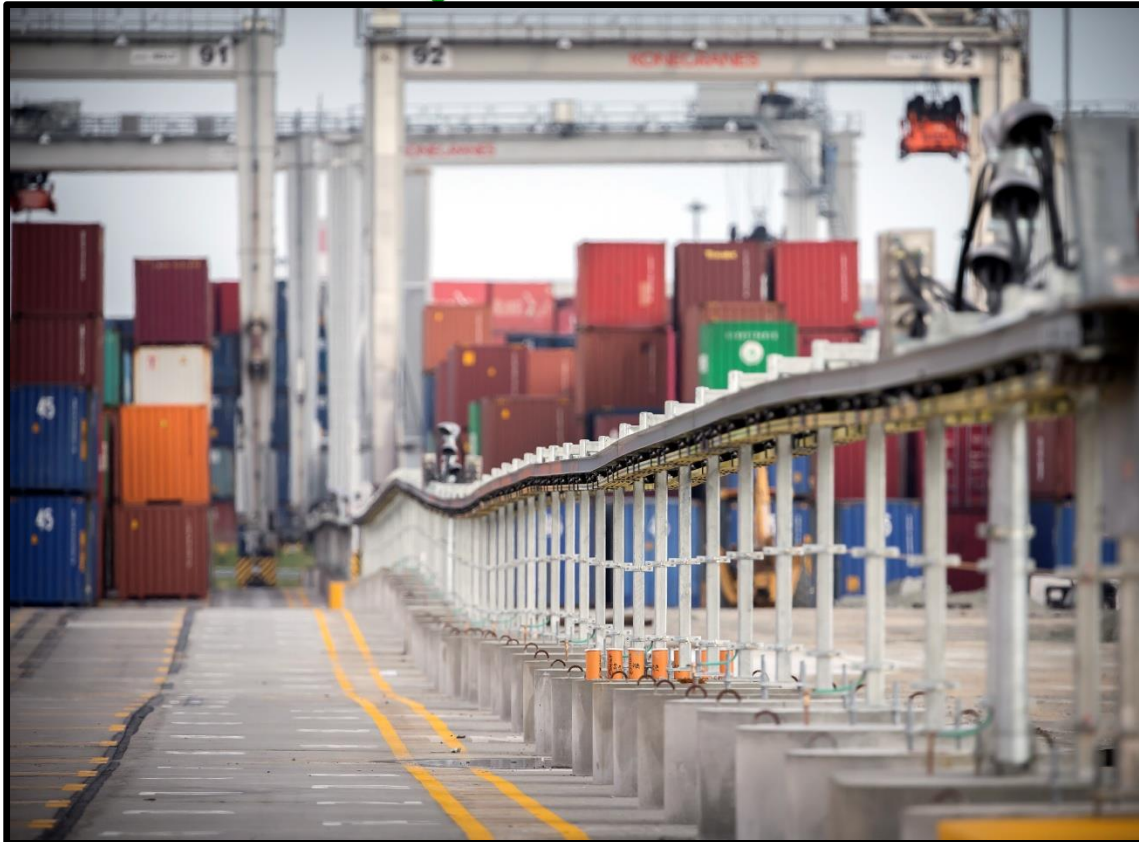


- Compare systems
- Gather lessons learned
- Understand engineering & operational constraints



# Electric Rubber Tired Gantry Crane Program

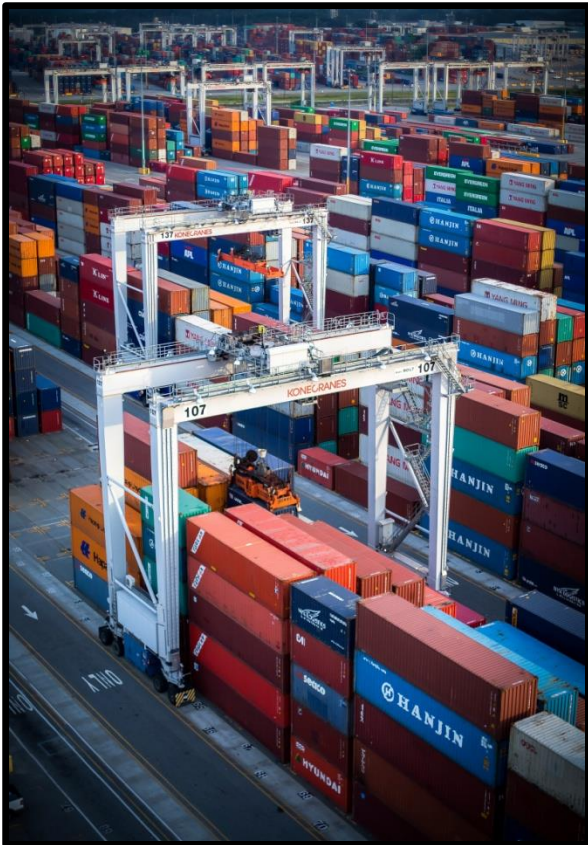
What system can be implemented that minimally impacts GPA's operational efficiencies? **Bus Bar** vs. Cable Reel



- Flexibility requirement to allow RTGs to switch rows poses a challenge that ultimately eliminates the cable reel solution
- Bus Bar requires solution to allow RTGs to change aisles with minimal time loss

# Electric Rubber Tired Gantry Crane Program

What is the Return on Investment when considering the high capital commitment vs the fuel and maintenance savings? Payback in 6.6 years with ROI of 13% ✓



- Diesel powered RTG uses 4.6 gal/hr
- eRTG uses 35 kW/Hr
- 55% less emissions of electric vs. diesel
- Bus Bar and RTG fit up requires major capital funding over a ten year period
- Less maintenance on the eRTG vs RTG



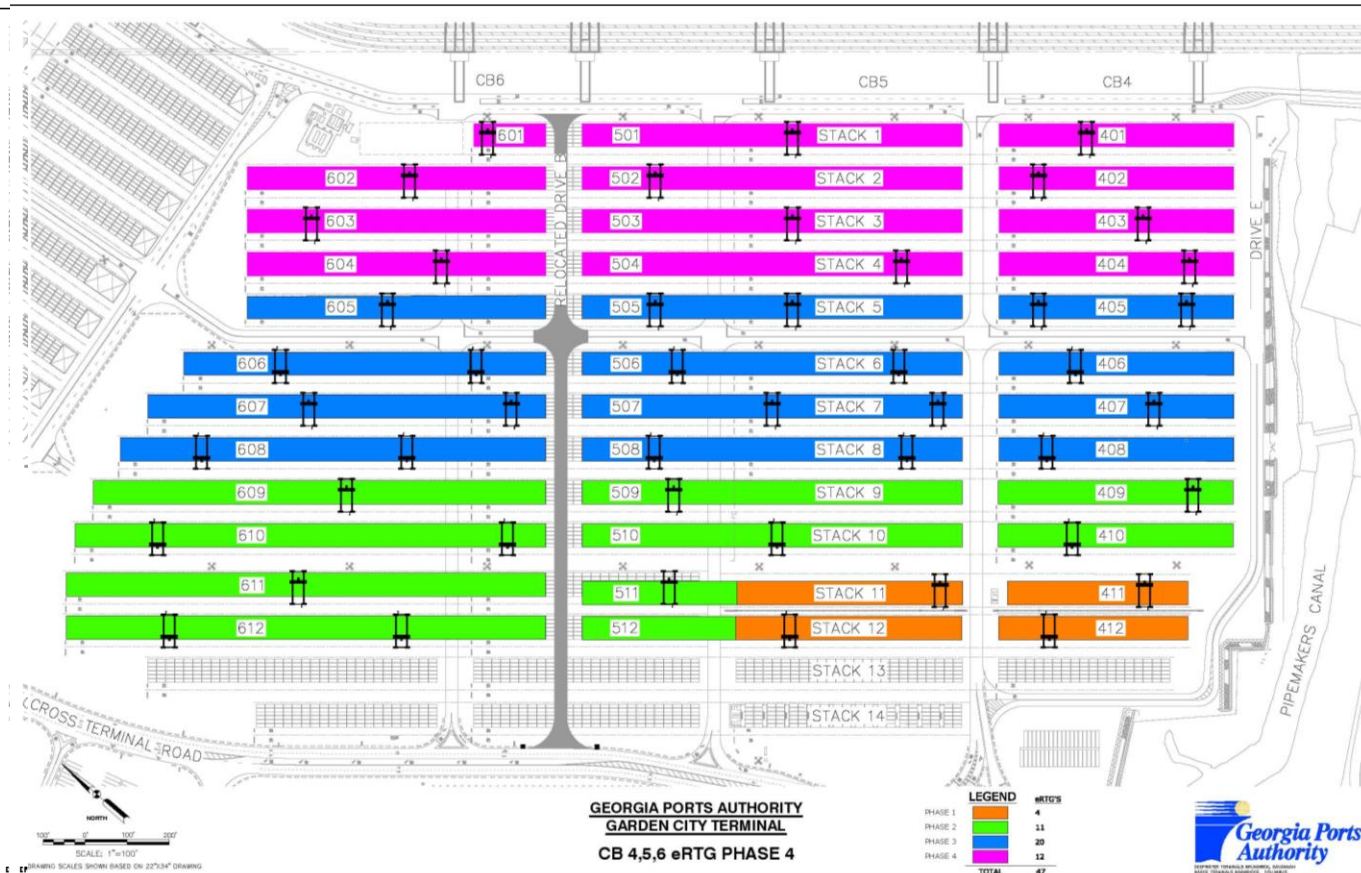
# Electric Rubber Tired Gantry Crane Program

How can the construction program be implemented smoothly over a 1,200 acre, operating container terminal?



# Electric Rubber Tired Gantry Crane Program

How can the construction program be implemented smoothly over a 1,200 acre, operating container terminal? Twelve Phases over a 10 year period ✓

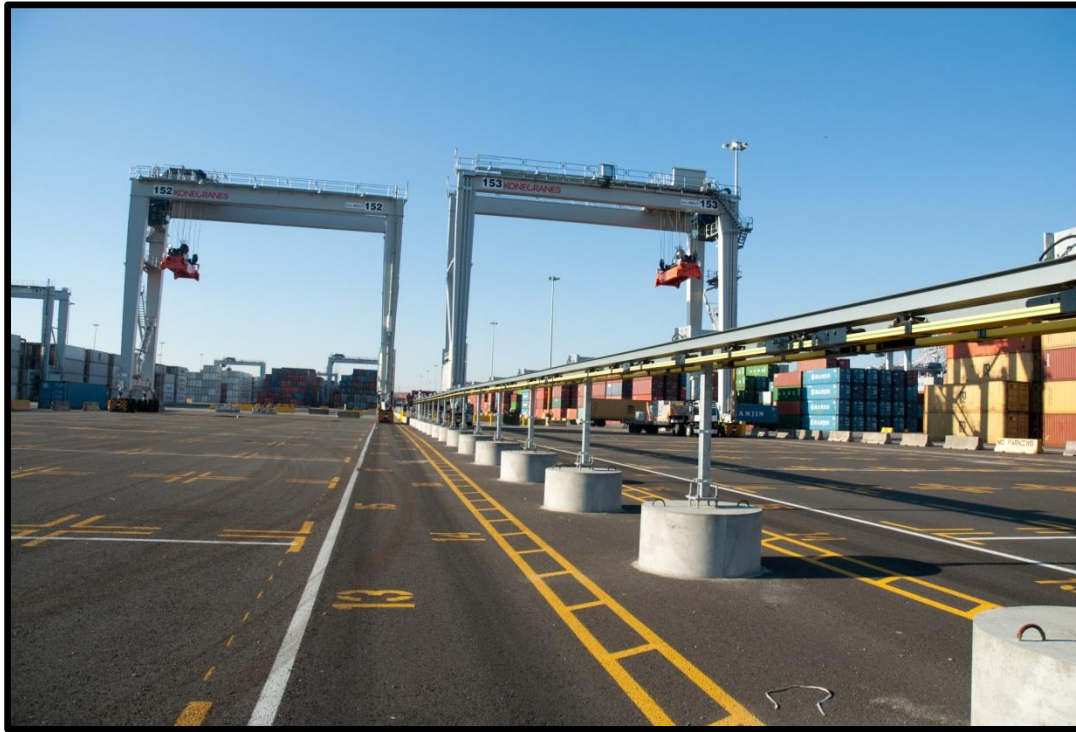




# Electric Rubber Tired Gantry Crane Program

Will the decision of eRTG haunt us in the future?

**NO!!!!!!**



Can this technology be applied at GPA?



What is the Return on Investment?



What system minimally impacts GPA's operational efficiencies?



Can the construction program be implemented?



# Electric Rubber Tired Gantry Crane Program



Thank You