

# Measurements of Diesel Truck Traffic Associated with Goods Movement

Douglas Houston, Margaret Krudysz, and Arthur Winer  
UCLA Urban Planning and Environmental Health Sciences Departments



HCMS Community Meeting  
August 1, 2007

## Statement of the Problem and Expectation

- Using traffic volumes as a measure of exposure can lead to large uncertainties if traffic counts are inaccurate
- Reliable, current surface street traffic counts are scarce
- Diesel/gasoline split often unknown for surface streets
- Expectation: Air pollutant exposure in port-adjacent communities will be driven predominately by heavy-duty diesel truck (HDDT) traffic emissions.

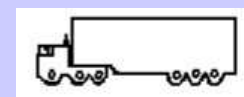
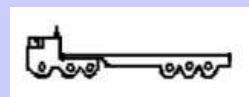
# Overall Objectives and Site Selection

---

- Direct measurements of port truck traffic:
    - Wilmington and western Long Beach Aug.-Sept. 2006
    - Surface street measurements only
    - Daily variation in traffic volumes
    - Weekday vs. weekend
  
  - Site selection process:
    - High truck volume intersections identified by previous traffic studies
    - Input from community leaders
    - Site surveys for safety and feasibility
    - Proximity to “sensitive” land uses such as schools, amenities
-

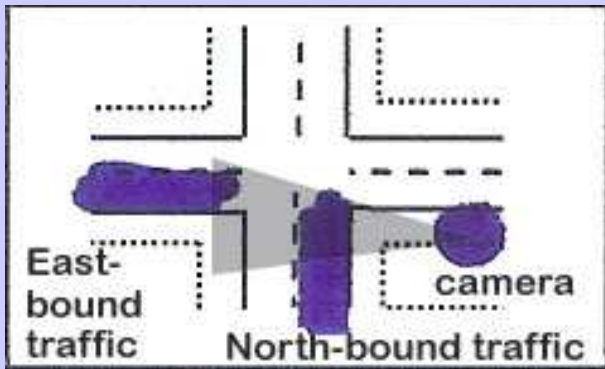
# Count Collection Methods

- Data Collection and Reduction:
  - August 15, 2006 and September 19, 2006, period with highest historic container volumes
  - 11 count locations (13 observation days)
  - Videotaped intersection or segment traffic 07:30 - 18:00
  - 30 minute or 1 hour sampling intervals (5.5 hours/day)
  - Weekdays (T/W/TH) with one 'long day' and one Saturday count
  - Data Reduction: JAMAR electronic traffic counting boards to summarize counts by direction and vehicle class.
  - Port Diesels: Bobtail-only, chassis-only truck, and container trucks

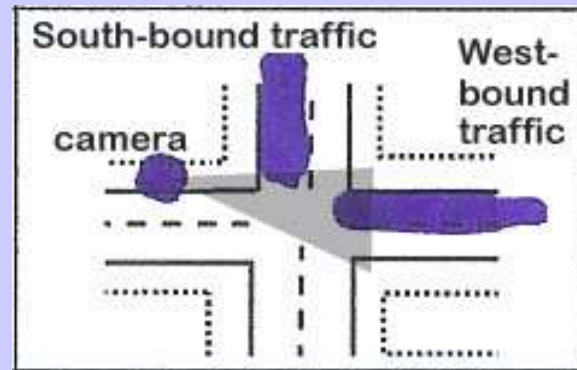


# Count Collection Methods

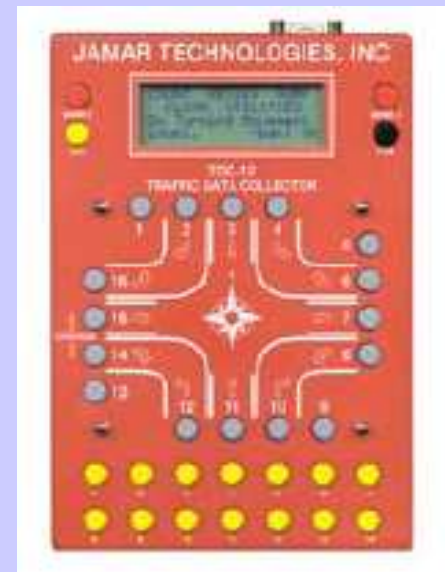
## Sample Video Camera Positions



Camera #1 Position



Camera #2 Position



JAMAR count board

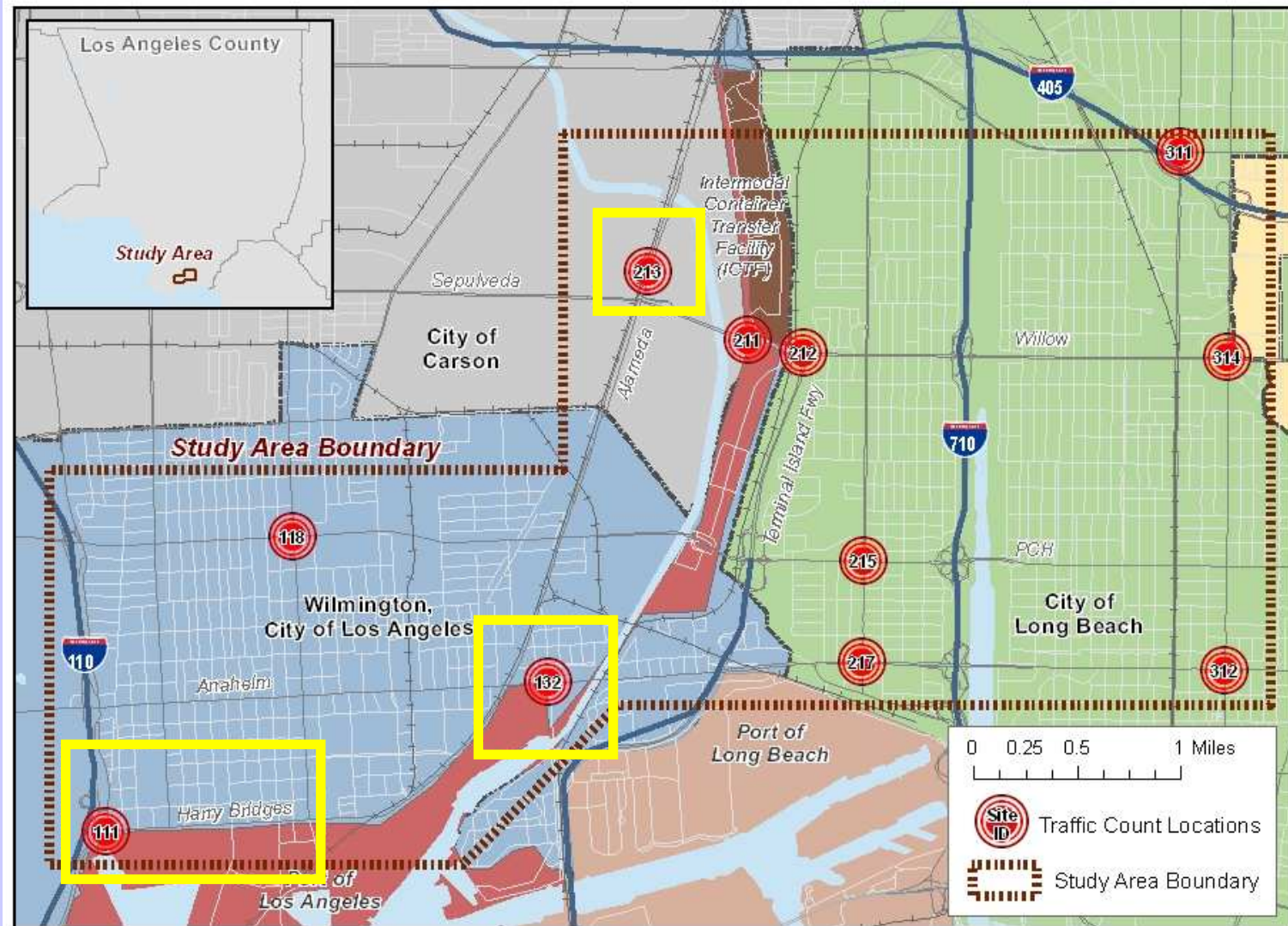
# Data Collection



## Site 111 Port Truck Traffic

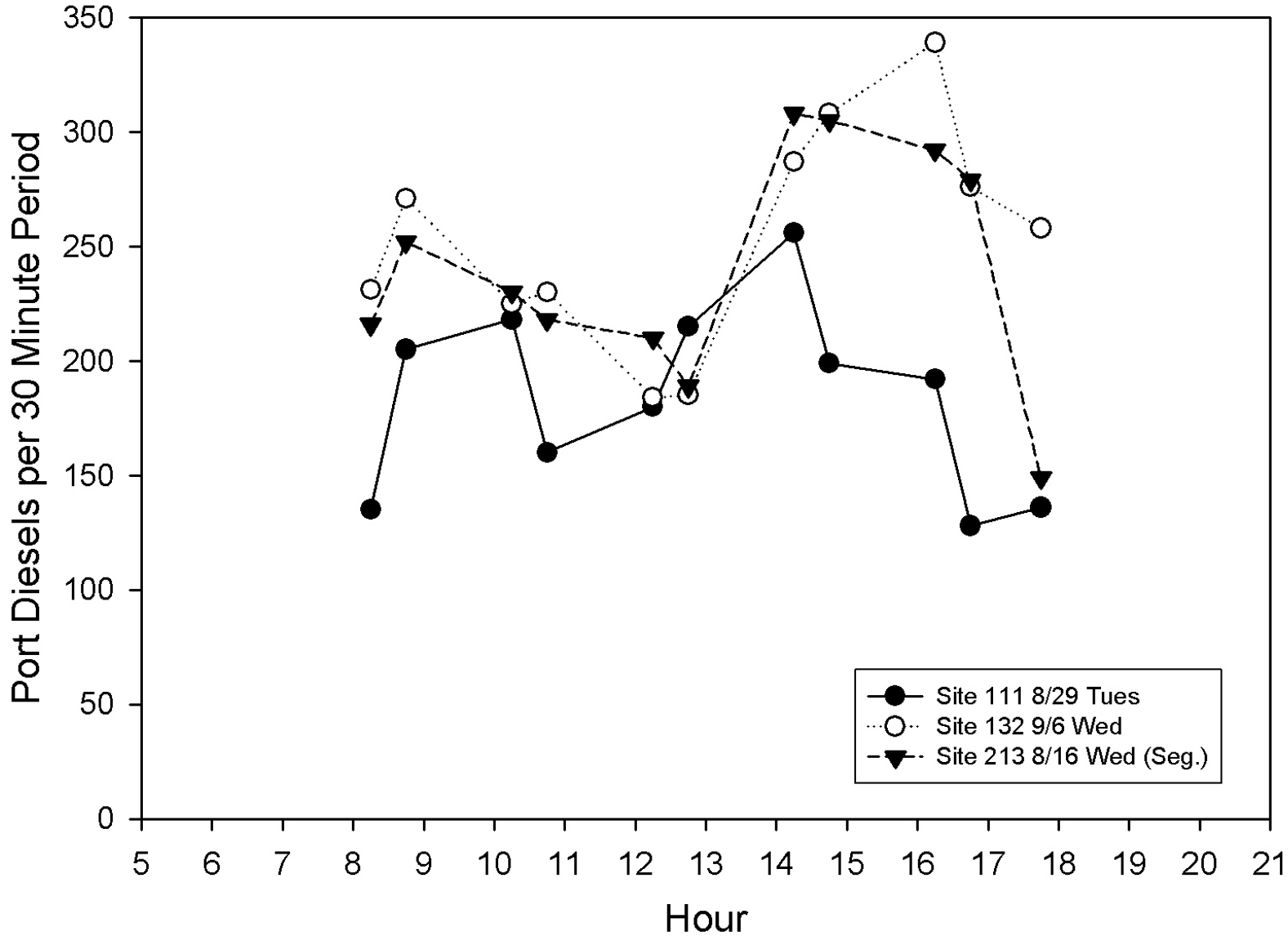


# Study Area and Traffic Count Locations

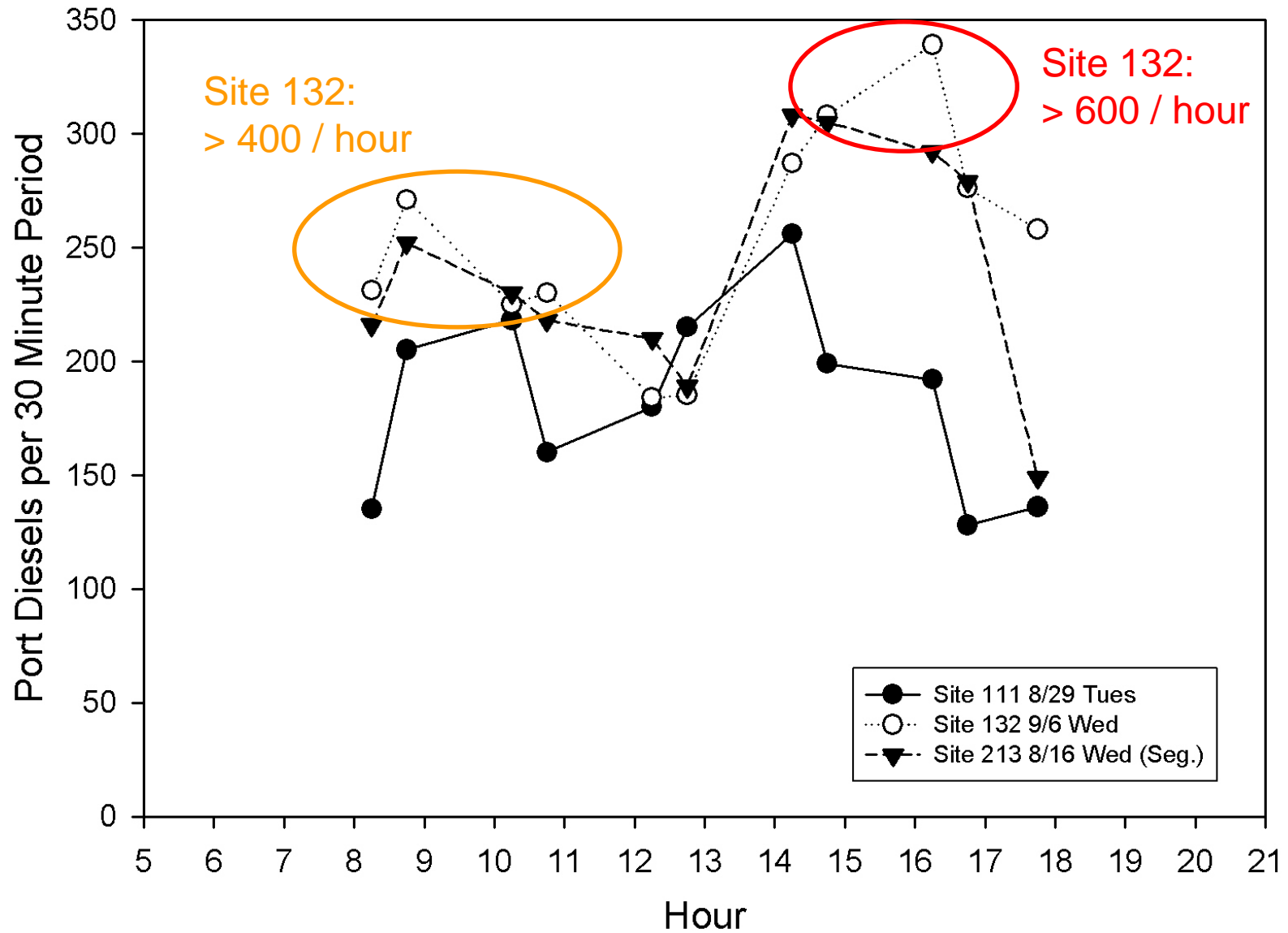




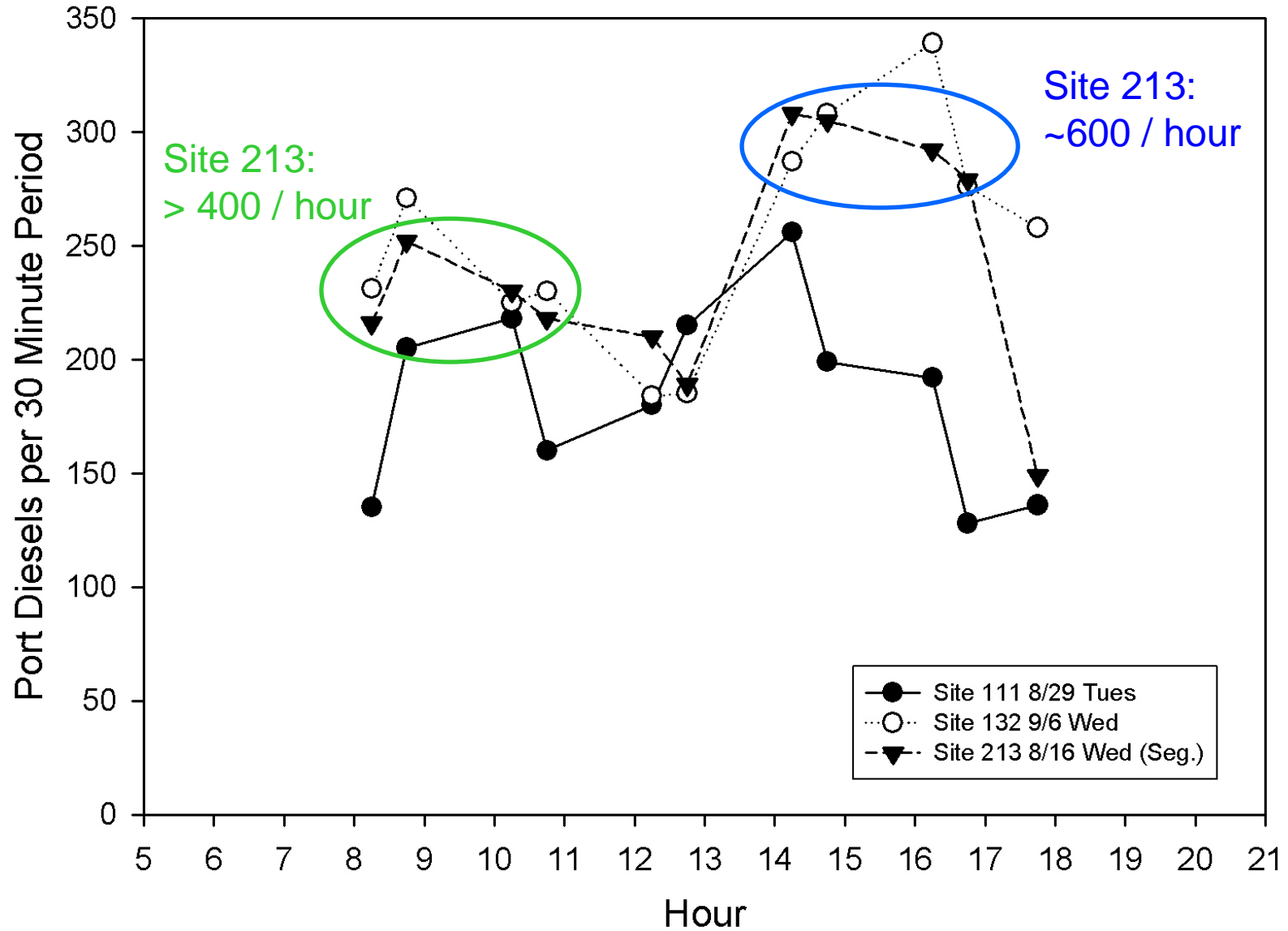
# Diurnal Patterns of Measured Port Diesel Traffic



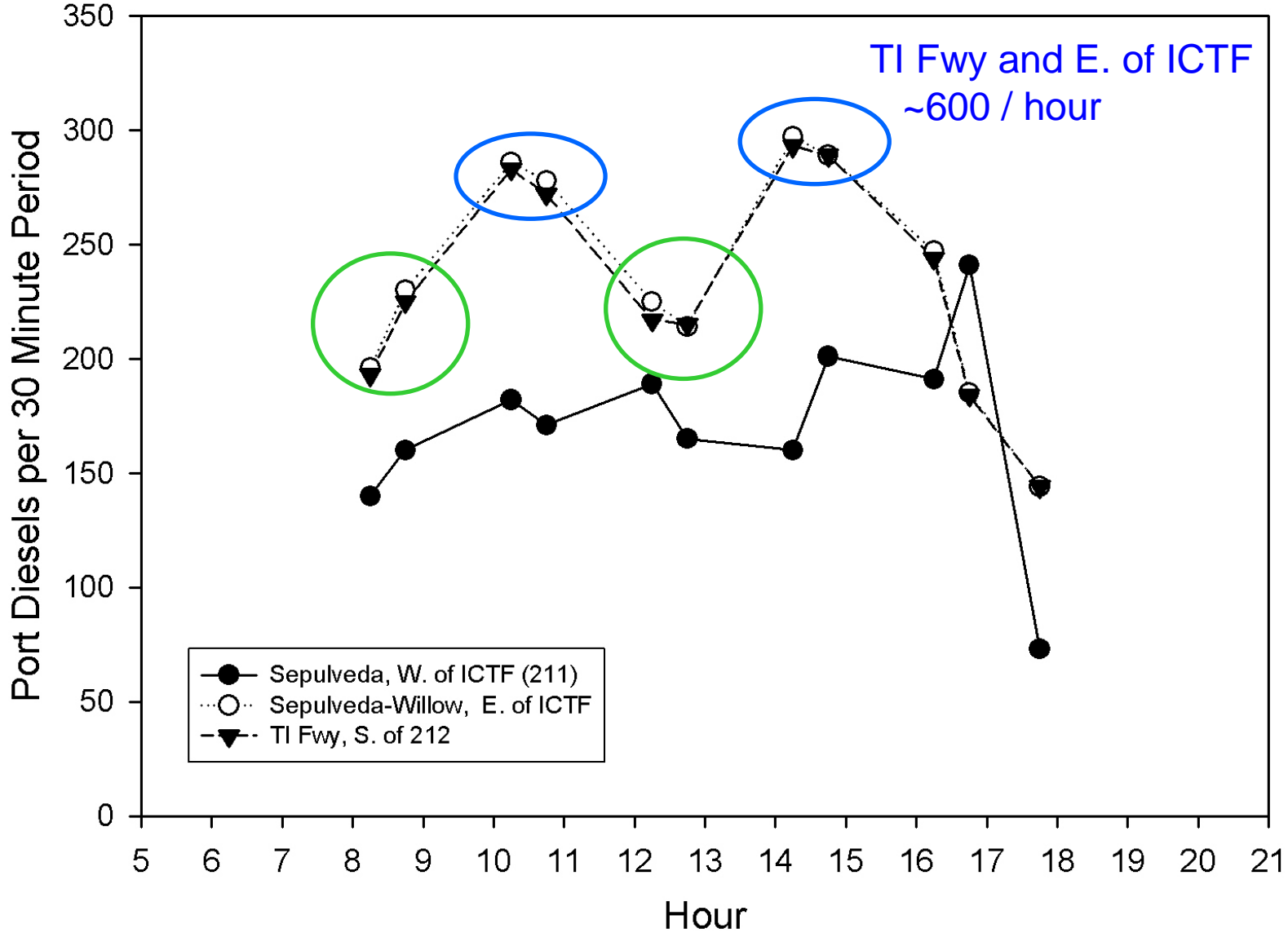
# Peak Volumes > 600 HDDDT Per Hour



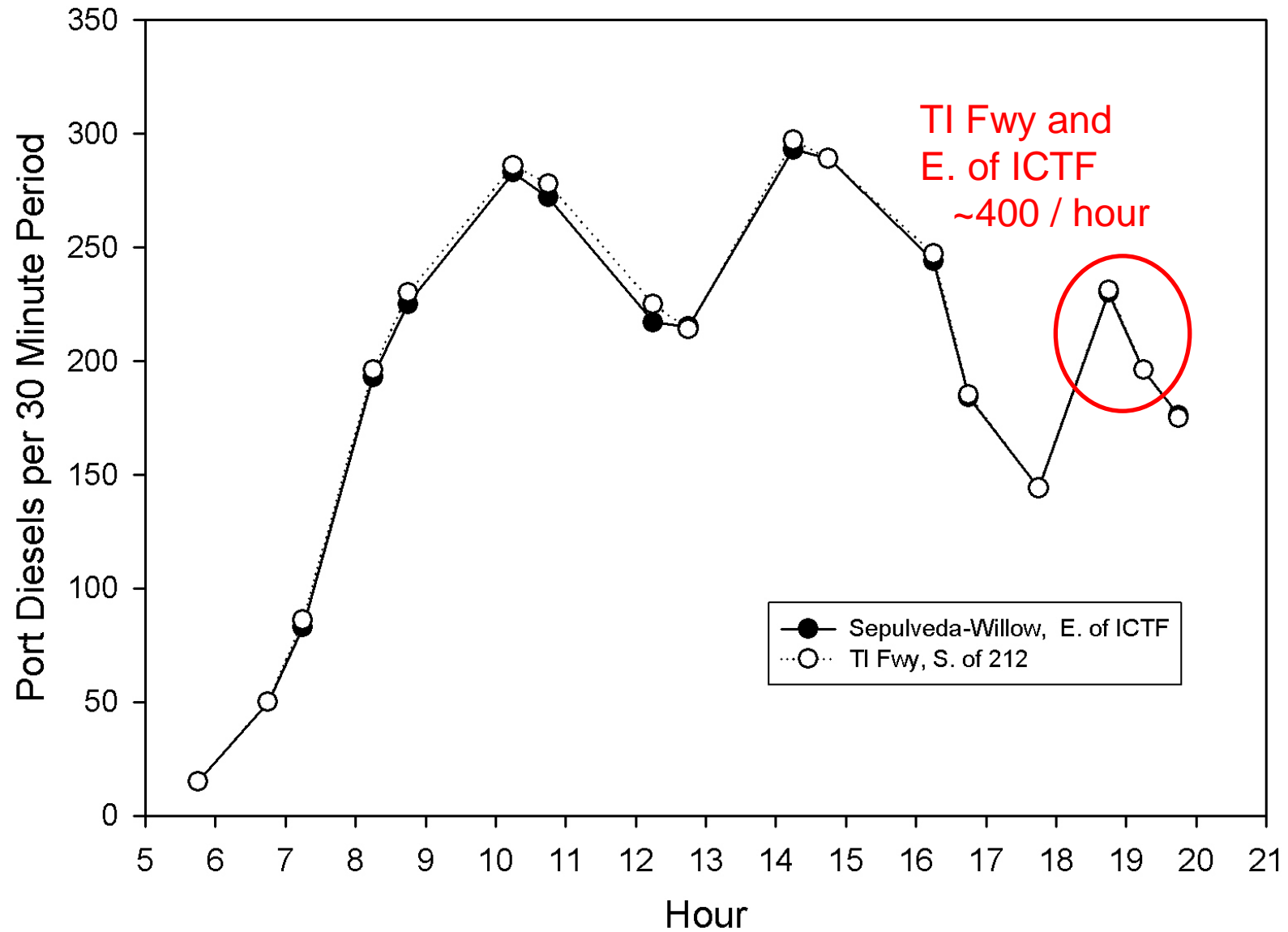
# Peak Volumes > 600 HDDDT Per Hour



# Peak Volumes > 600 HDDT Per Hour



# Third Peak in Early Evening



# Key Findings

- Up to 600-700 HDDT per hour at most heavily impacted intersections and line segments in port-adjacent communities
- Many HDDT observed to be smoky and highly polluting
- HDDT travel on surface streets with substantial pedestrian traffic and numerous shops/facilities, as well as near-by schools
- On-road, in-vehicle and near-roadway exposures are expected to be very high for the intersections and line segments we studied

# Acknowledgements

We appreciate the support and enthusiasm our research team:

- Dorothy Le and Judy Ramirez, Research Assistants

This research was supported by:

- University of California Transportation Center
- The UCLA Ralph and Goldy Lewis Center for Regional Policy Studies
- The UCLA Department of Environmental Health Sciences Community
- The UCLA Department of Urban Planning
- The Dwight D. Eisenhower Transportation Fellowship Program

We also appreciate the support of:

- The California Air Resources Board
- Kathleen Kozawa, UCLA School of Public Health
- Dr. Paul Ong, UCLA School of Public Affairs
- Dr. Michael Geller, USC Department of Environmental Engineering
- Dr. Jun Wu, UCI College of Health Sciences
- Leah Brooks, McGill University Department of Economics