Warehouse ISR Working Group

DECEMBER 17, 2020

Agenda

- Introduction & Background
- Updates to Draft Proposed Rule
- IEc Warehouse Study Results
- Proposed Rule Stringency
- Compliance Analysis - Emissions and Costs
- Upcoming Process - CEQA & Preliminary Draft Staff Report & Public Workshops

Background – ISR Rule Development Process

- 2016 AQMP Control Measure MOB-03
- Subsequent year-long process resulted in Board direction to initiate rulemaking
  - 12 Warehouse ISR working group meetings since then
- Other plans have also called for emission reductions, including through mechanisms like Warehouse ISR
  - AB 617 CERPs, Contingency Measures Plan, CARB Mobile Source Strategy
- WAIRE concept developed over past year and a half
  - Draft WAIRE Technical document, two drafts of PR 2305, one draft of PR 316

Rule Development Process – Next Steps

- CEQA Notice of Preparation comment period ended 12/15
  - Comments are taken seriously and we want to ensure responses are appropriate

This takes time

- Original plan was to release Preliminary Draft Staff Report (PDSR) on Friday, 12/18 and Draft EA (CEQA) early January
  - Following slides preview expected discussion in PDSR
- In order to allow adequate time to respond to comments, PDSR will have a minor delay until after the holidays, as well as CEQA

Proposed Updates to PR 2305

- Adding proposed stringency and phase-in schedule (see later slides)
- Amending language to address concern about potential for rule to apply to retail facilities
- Adding definitions for facility owner and land owner
  - Warehouse Operations Notification applicable to facility owner. Facility owner or land owner can opt in to earn Points if they choose
- Clarifying that Points can be transferred offsite only in the same compliance period as they were earned
- Adding due date for mitigation fee (same time as Annual WAIRE Report)
- Solar in WAIRE Menu reduced by one point to account for updated overlap analysis of solar generation and natural gas power plant production
- Adding ‘authorized official’ requirement for reporting
- Additional clarifications and clean-up

Proposed Rule 316 – Fees for Rule 2305

- Rule concept discussed in previous working group meetings
- First draft rule released with Notice of Preparation on Nov. 13
- PR 316 includes administrative fees to recover cost of South Coast AQMD compliance activities
  - Fees will be set at a level equal to South Coast AQMD costs
- Fees tied to report submissions
- Upcoming updates to rule language in next draft:
  - Removing late fees (late payment will result in NOV)
  - Other minor clarifications
  - Adding proposed fee levels (~$25 to ~$400, depending on the report)

Socioeconomic Analysis of PR 2305

- Evaluate potential costs and jobs impacts
- Demographic analysis of communities near warehouses
- Port economic study for Clean Truck Rate
- IEc study on potential for warehouse relocation with ISR
  - Next slides
- 3rd party peer review
  - Kleinhenz Economics

IEc

Warehouse Relocations Associated with Potential Warehouse Indirect Source Rule (ISR)

Presented by:

Jason Price

Industrial Economics, Inc. (IEc)

Contributors:

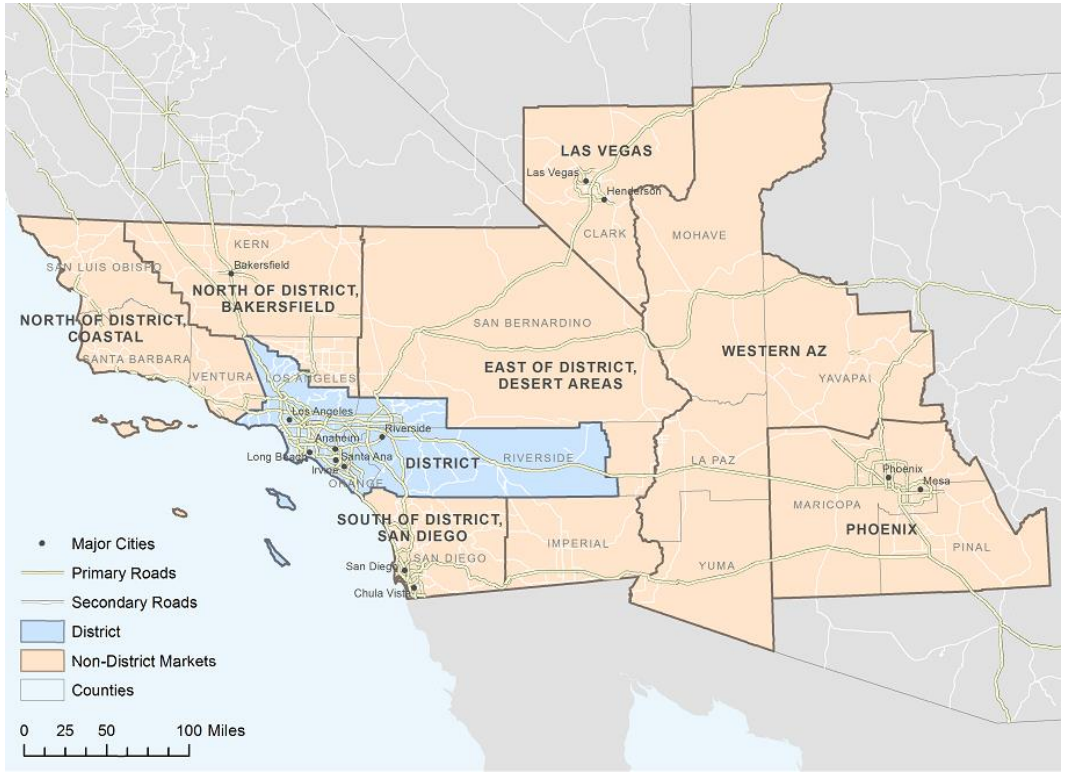
Derek Ehrnschwender (IEc)
Nick Manderlink (IEc)
Jasna Tomic (CALSTART)

December 17, 2020

Overview of Approach

- Model relocation as a decision, based on ISR costs and costs/cost savings associated with relocation. Warehouse operators assumed to choose less costly option.

ISR COSTS	COSTS(SAVINGS) ASSOCIATED WITH RELOCATION
$/sq. ft. of warehouse space, as provided by South Coast AQMD • $0/sq. ft. • $0.50/sq. ft. • $1.00/sq. ft. • $1.50/sq. ft. • $1.75/sq. ft. • $2.00/sq. ft.	• Changes in transportation costs • Changes in rental costs for warehouse space • Changes in labor costs • Changes in electricity costs • Moving costs • Development fees (applicable only for construction of new warehouse space in outlying markets)



7 Potential Outlying Markets for Relocation

Overview of Approach – Analytic Scenarios

- Number of relocations depends on (1) warehouse capacity in other markets and (2) the routes/pathways that warehouses serve.
- We consider 2 capacity scenarios and 2 pathway scenarios.

Capacity Scenarios

Medium term capacity scenario: vacant warehouse space and warehouse developments approved or under way.

Capacity expansion scenario: all land zoned as industrial within 2 miles of major road may be developed into warehouse space.

Pathway Scenarios

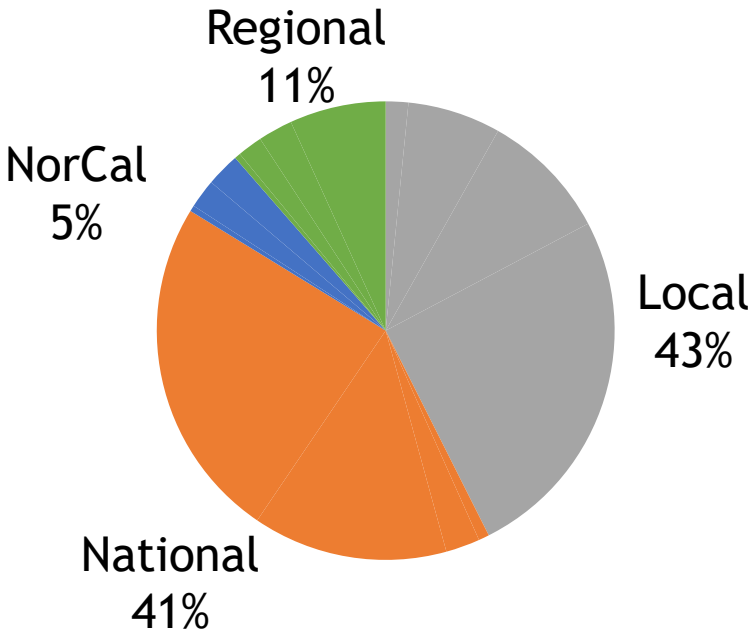
Composite pathway scenario: all warehouses assumed to be representative of the entire warehouse sector (serve all routes)

Specialized pathway scenario: consider possibility of warehouse specialization in individual goods pathways.

Goods Flow Pathways

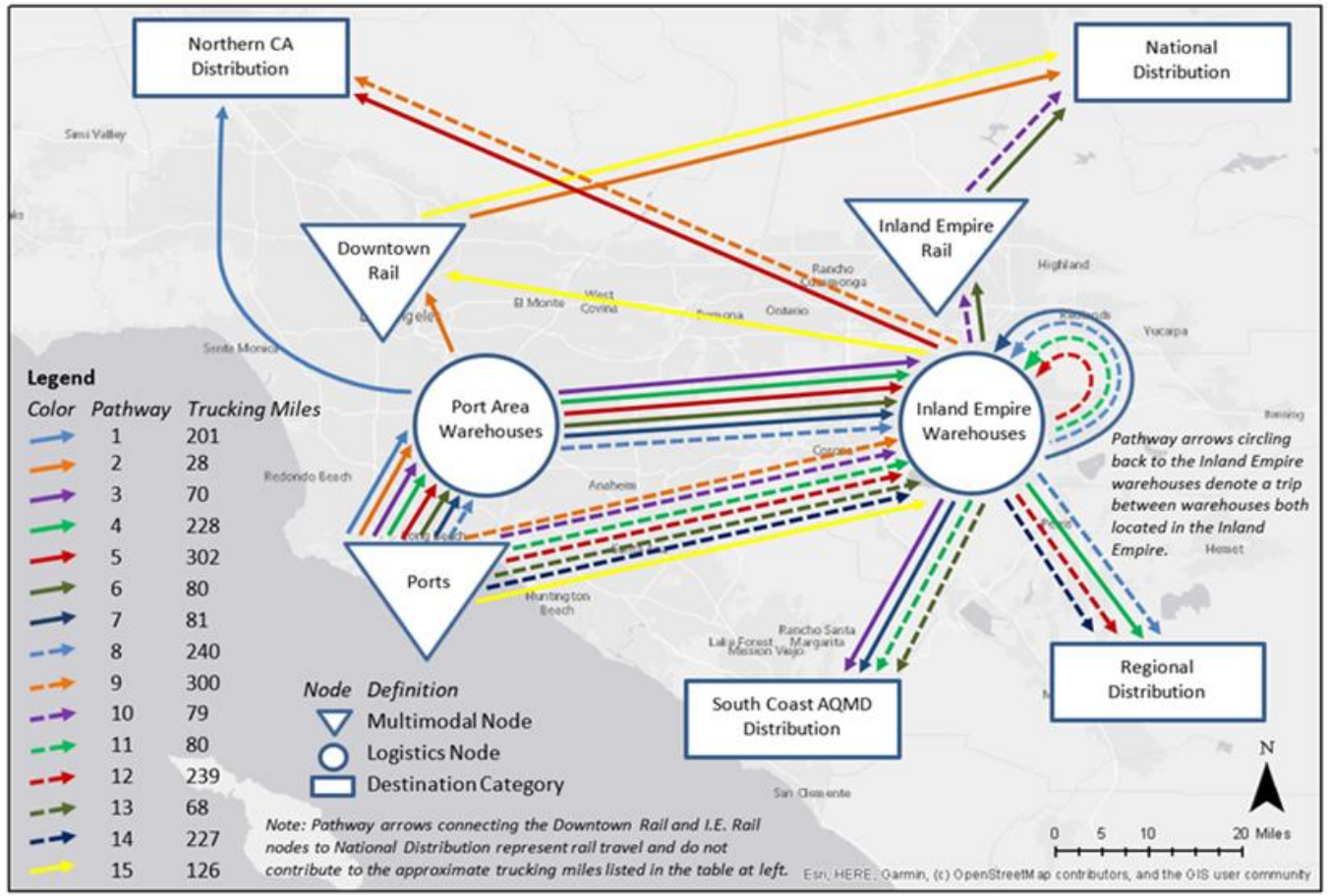
The Simple Picture

The Flow of SoCal Warehoused Goods



~31% of all goods movement not shown that go straight from port to rail

A More Complicated View



Projected Relocations

ESTIMATED WAREHOUSE RELOCATIONS – ISR COSTS OF $0/SQUARE FOOT, $0.50/SQUARE FOOT, $1.00/SQUARE FOOT AND $1.50/SQUARE FOOT

PATHWAY SCENARIO	CAPACITY SCENARIO	RELOCATIONS (NO. OF WAREHOUSES)							
		TOTAL - ALL MARKETS	BAKERSFIELD	COASTAL AREAS	DESERT AREAS	LAS VEGAS	PHOENIX	SAN DIEGO	WESTERN AZ
Specialized Pathway	Medium Term	0	0	0	0	0	0	0	0
	Capacity Expansion	10	0	0	10	0	0	0	0
Composite	Medium Term	0	0	0	0	0	0	0	0
	Capacity Expansion	0	0	0	0	0	0	0	0

ESTIMATED WAREHOUSE RELOCATIONS – ISR COSTS OF $1.75/SQUARE FOOT AND $2.00/SQUARE FOOT

PATHWAY SCENARIO	CAPACITY SCENARIO	RELOCATIONS (NO. OF WAREHOUSES)							
		TOTAL - ALL MARKETS	BAKERSFIELD	COASTAL AREAS	DESERT AREAS	LAS VEGAS	PHOENIX	SAN DIEGO	WESTERN AZ
Specialized Pathway	Medium Term	1	0	0	0	0	0	0	0
	Capacity Expansion	16	6	0	10	0	0	0	0
Composite	Medium Term	0	0	0	0	0	0	0	0
	Capacity Expansion	0	0	0	0	0	0	0	0

**All values rounded to nearest whole warehouse.*

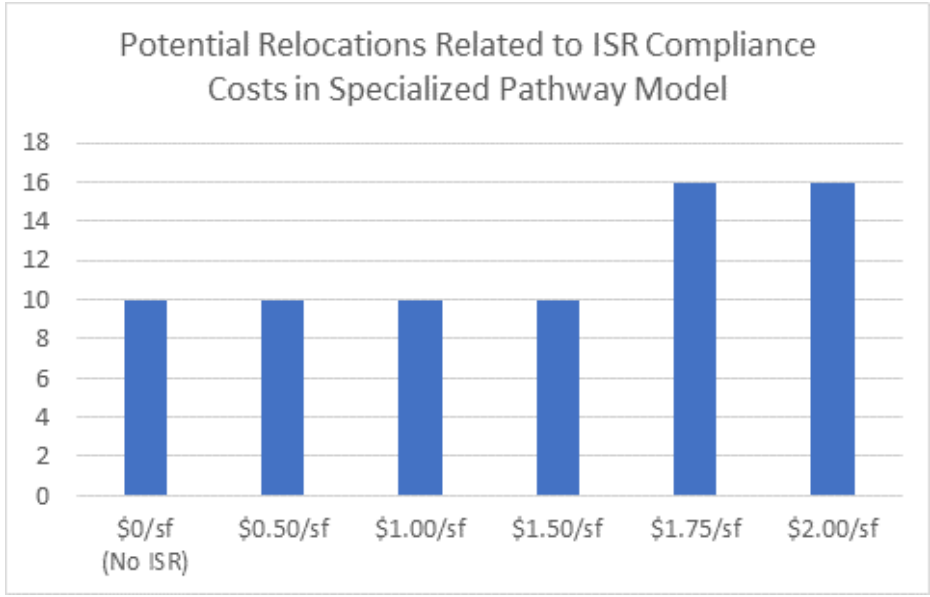
Projected Relocations

ESTIMATED WAREHOUSE RELOCATIONS – ISR COSTS OF $0/SQUARE FOOT, $0.50/SQUARE FOOT, $1.00/SQUARE FOOT AND $1.50/SQUARE FOOT

PATHWAY SCENARIO	CAPACITY SCENARIO	RELOCATIONS (NO. OF WAREHOUSES)							
		TOTAL – ALL MARKETS	BAKERSFIELD	COASTAL AREAS	DESERT AREAS	LAS VEGAS	PHOENIX	SAN DIEGO	WESTERN AZ
Specialized Pathway	Medium Term	0	0	0	0	0	0	0	0
	Capacity Expansion	10	0	0	10	0	0	0	0
Composite	Medium Term	0	0	0	0	0	0	0	0
	Capacity Expansion	0	0	0	0	0	0	0	0

- Relocations at $0/sq. ft. counter to what we see happening. This reflects factors that we cannot capture quantitatively:
  - Labor availability
  - Value of customer proximity
  - Risks of warehouse development
  - Barriers to warehouse development

**All values rounded to nearest whole warehouse.*



Projected Relocations – Incremental to Relocations at $0/sq. ft.

PATHWAY SCENARIO	CAPACITY SCENARIO	RELOCATIONS (NO. OF WAREHOUSES)							
		ALL MARKETS	BAKERSFIELD	COASTAL AREAS	DESERT AREAS	LAS VEGAS	PHOENIX	SAN DIEGO	WESTERN AZ
ISR Compliance Costs of $0.50 per Square Foot									
Specialized Pathway	Medium Term	0	0	0	0	0	0	0	0
	Capacity Expansion	0	0	0	0	0	0	0	0
Composite	Medium Term	0	0	0	0	0	0	0	0
	Capacity Expansion	0	0	0	0	0	0	0	0
ISR Compliance Costs of $1.00 per Square Foot									
Specialized Pathway	Medium Term	0	0	0	0	0	0	0	0
	Capacity Expansion	0	0	0	0	0	0	0	0
Composite	Medium Term	0	0	0	0	0	0	0	0
	Capacity Expansion	0	0	0	0	0	0	0	0
ISR Compliance Costs of $1.50 per Square Foot									
Specialized Pathway	Medium Term	0	0	0	0	0	0	0	0
	Capacity Expansion	0	0	0	0	0	0	0	0
Composite	Medium Term	0	0	0	0	0	0	0	0
	Capacity Expansion	0	0	0	0	0	0	0	0
ISR Compliance Costs of $1.75 per Square Foot									
Specialized Pathway	Medium Term	0	0	0	0	0	0	0	0
	Capacity Expansion	6	6	0	0	0	0	0	0
Composite	Medium Term	0	0	0	0	0	0	0	0
	Capacity Expansion	0	0	0	0	0	0	0	0
ISR Compliance Costs of $2.00 per Square Foot									
Specialized Pathway	Medium Term	0	0	0	0	0	0	0	0
	Capacity Expansion	6	6	0	0	0	0	0	0
Composite	Medium Term	0	0	0	0	0	0	0	0
	Capacity Expansion	0	0	0	0	0	0	0	0

- Projected relocations at $1.75/sf and $2/sf represent ~0.2% of modeled warehouses in South Coast AQMD area potentially subject to the ISR.
- Relocations all to Bakersfield.
- Relocations on pathway for national distribution.
- No relocations under composite pathway scenarios or in specialized pathway scenarios ≤$1.50/sf.

**All values rounded to nearest whole warehouse.*

IEc

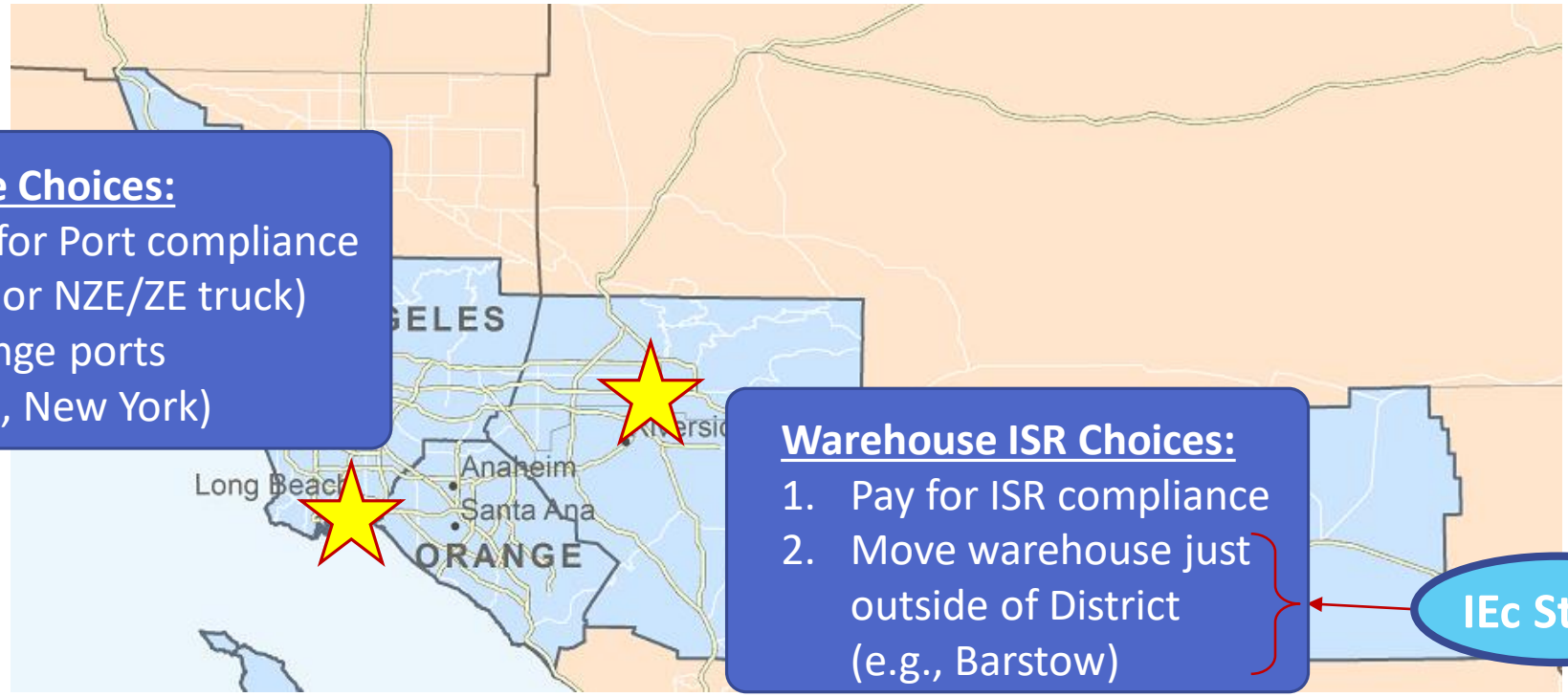
Questions?

IEc Study Results in Relation to Port Study

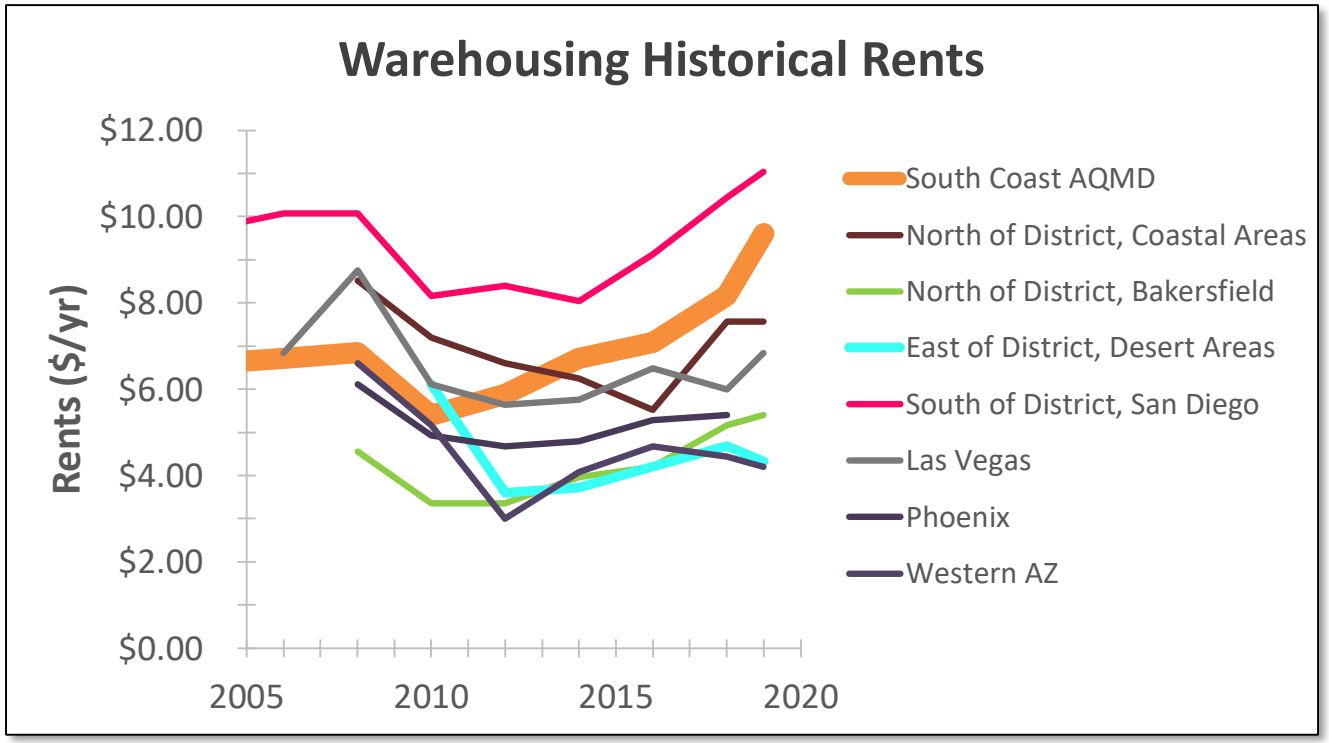
- IEc study shows no new relocations outside of South Coast AQMD at ≤$1.50/sf in compliance cost
- Port economic study showed up to ~1.4% cargo diversion at a rate of $70/TEU
  - Cargo loss was from national distribution
  - Market share for national distribution has been declining since at least 2007
  - Even with loss of market share, record volumes repeatedly achieved in past several years
  - Potential cost @ $70/TEU = $630 million/year

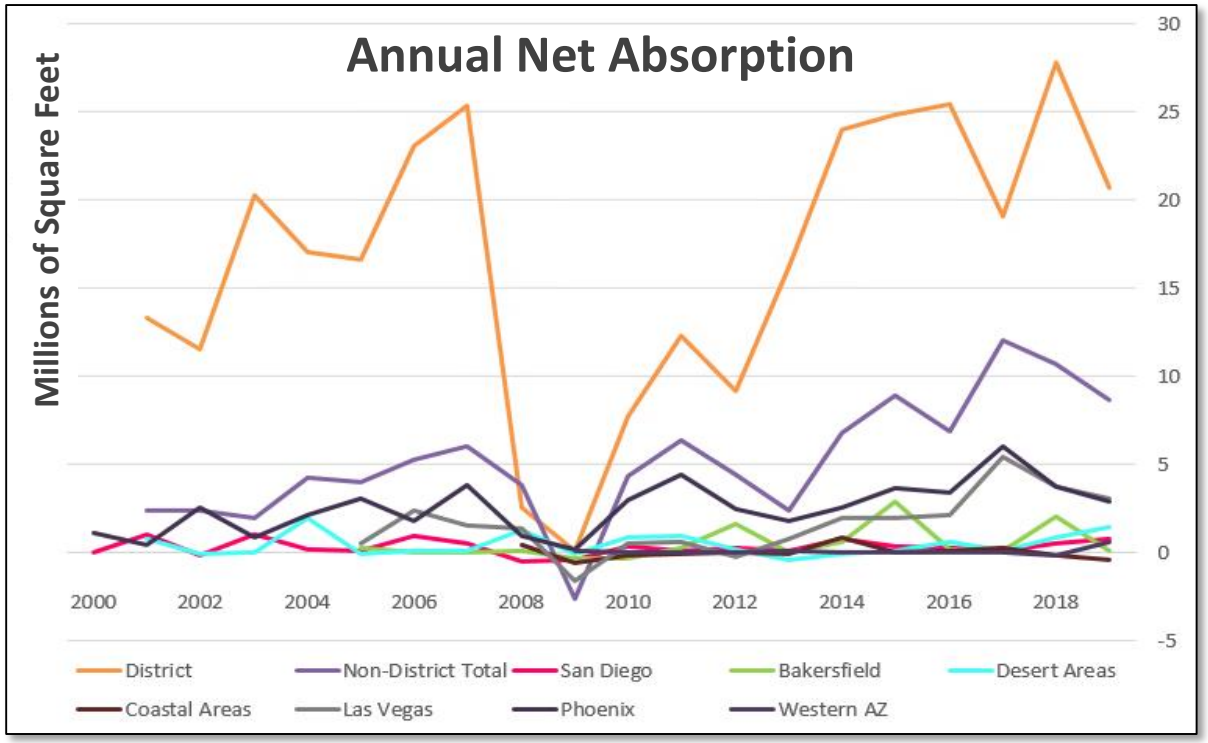
Port Economic Study for Clean Truck Program is not Directly Applicable to Warehouse ISR

- Difference choices for cargo owners between port and warehouse compliance costs



Increasing Warehousing Costs, and Growth





Warehouses in South Coast AQMD Pay Increasing Costs of ~$0.45/year in Rents Paid to Landlords…

For the ~750 msf covered by PR 2305, this is ~$340 million in increased costs per year, ~$3.4 billion total after 10 years

…Yet Warehousing Has Grown Faster In South Coast AQMD Than Any Surrounding Areas

Warehouses aren't leaving

Analytical Approach to Evaluate Potential Stringency

- Structure of PR 2305 allows many different compliance options
  - Potential emissions benefits and costs vary year to year and warehouse to warehouse
- **Scenario analysis** used to evaluate potential impacts of PR 2305
  - Builds on the approach shown in Oct. 30 working group
  - 18 scenarios modeled, representing wide range of compliance options
  - Key inputs include Draft WAIRE Menu Technical Report, EMFAC 2017, and CARB META tool
    - Analysis accounts for ACT, Low NOx Omnibus, Heavy Duty I/M

Scenarios Analyzed

Scenario	Scenario Description
1	NZE Class 8 Truck Acquisitions and Visits from those trucks
2	NZE Class 8 Truck Acquisitions (Early Purchase) and Visits from those trucks
3	NZE Class 8 Truck Acquisitions Funded by Carl Moyer and Visits from those trucks
4	NZE Class 8 Truck Visits (From Non-Owned Fleet)
5	ZE Class 8 Truck Visits (From Non-Owned Fleet)
6	Level 3 Charger Install in First Year and ZE Class 6 & 8 Truck Acquisitions & Visits from those trucks
7	Pay Mitigation Fee
8	NZE Class 6 Truck Acquisitions and Visits from those trucks (No Incentives)
9	NZE Class 6 Truck Visits (From Non-Owned Fleet)
10	ZE Class 6 Truck Visits (From Non-Owned Fleet)
11	Rooftop Solar Panel Installations and Usage
12	H2 Station Installations in First Year and ZE Class 8 Truck Acquisitions and Visits from those trucks
13	ZE Class 2b-3 Truck Acquisitions and Visits from those trucks
14	ZE Class 2b-3 Truck Visits (From Non-Owned Fleet)
15	Filter System Installations
16	Filter Purchases
17	TRU Plug Installations and Usage in Cold Storage Facilities
18	ZE Hostler Acquisitions and Usage

Stringency Background

WPCO = Warehouse Points Compliance Obligation
WATTs = Weighted Annual Truck Trips
Stringency = Points per WATT
Annual Variable = Phase-in schedule

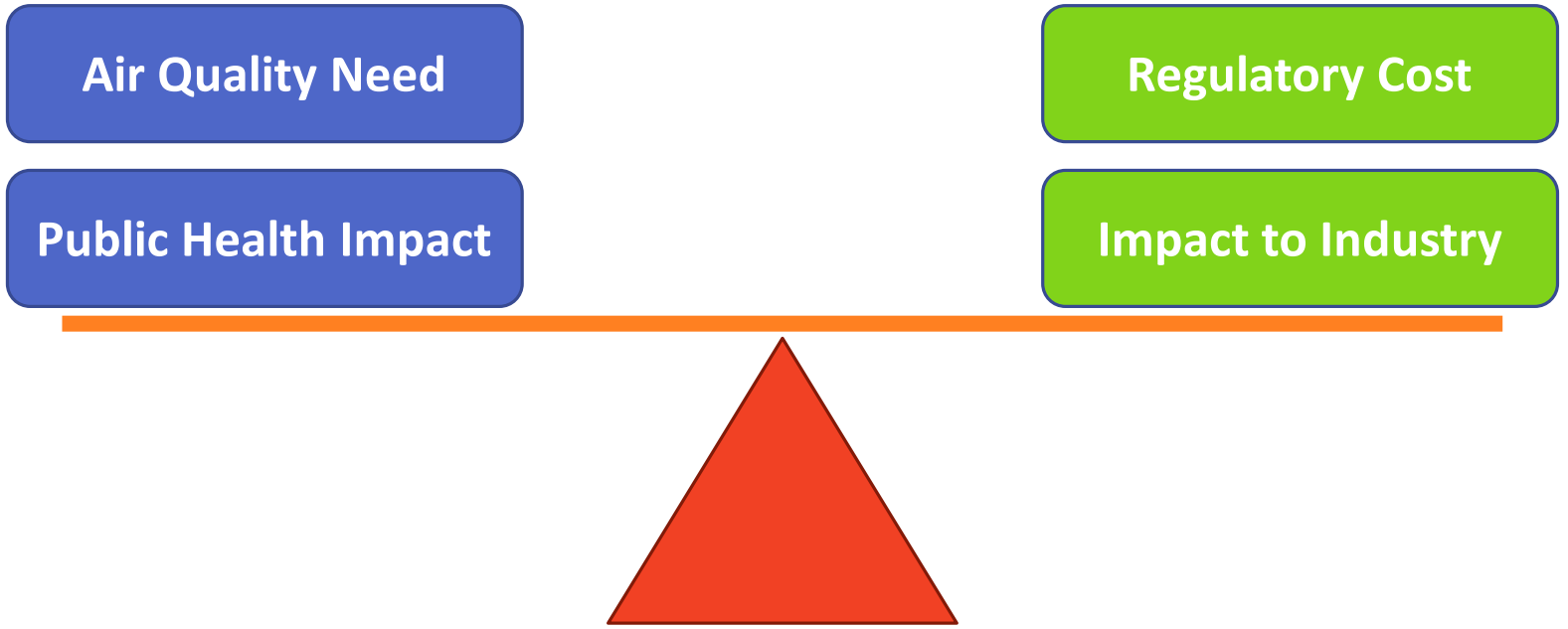
- Staff proposed analyzing stringency in range of 0.0001 – 0.005

Examples of Potential Outcomes *(3-year Phase-In)*

Stringency	NOx Reductions (tpd)		Diesel PM Reductions (tpd)		Potential Costs ($/yr)		Potential Costs ($/sf/yr)	
	Median Scenario	*Range**	*Median Scenario*	*Range**	*Median Scenario*	*Range**	*Median Scenario*	*Range**
0.0001	0	0 – 1.5	0	0 – 0.01	~$53*M*	$1-$766*M*	$0.08	~$0-$1.18
0.0025	1.4	0 – 6.7	0.010	0 – 0.03	~$130*M*	$3*M*-$837*M*	$0.19	~$0-$1.25
0.005	2.7	0 – 13.8	0.021	0 – 0.05	~$359*M*	$7*M*-$1.49*B*	$0.54	~$0.01-$1.77

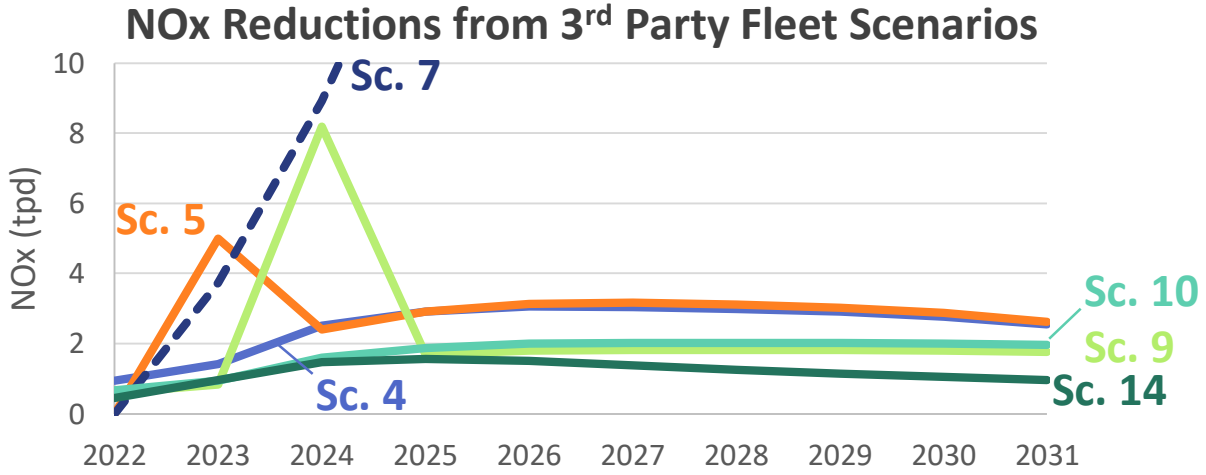
- Emission benefits and costs are beyond recent CARB regulations

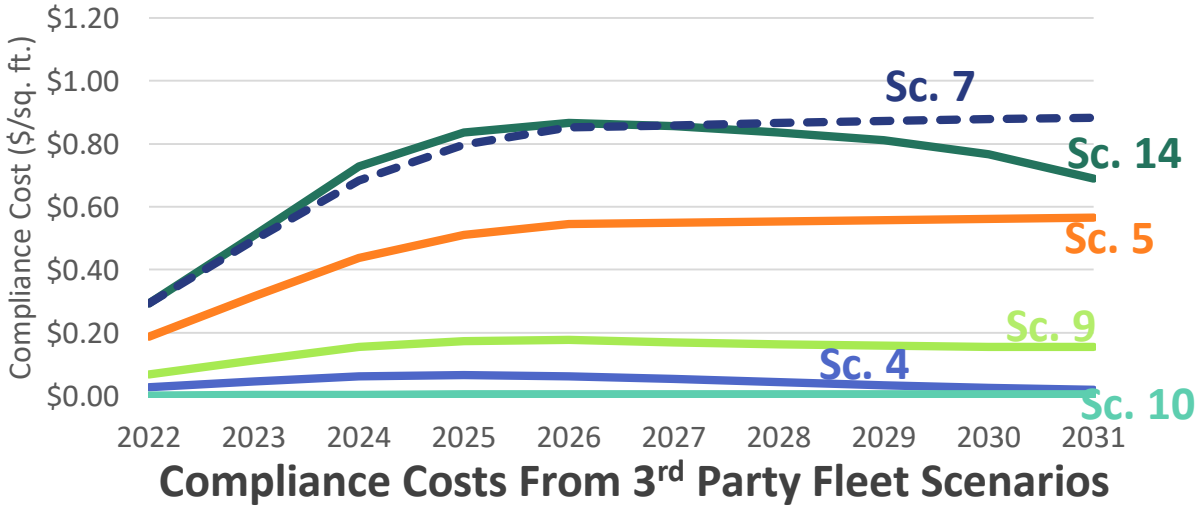
**Excludes three scenarios heavily reliant on mitigation fees that have higher costs and emission reductions.*

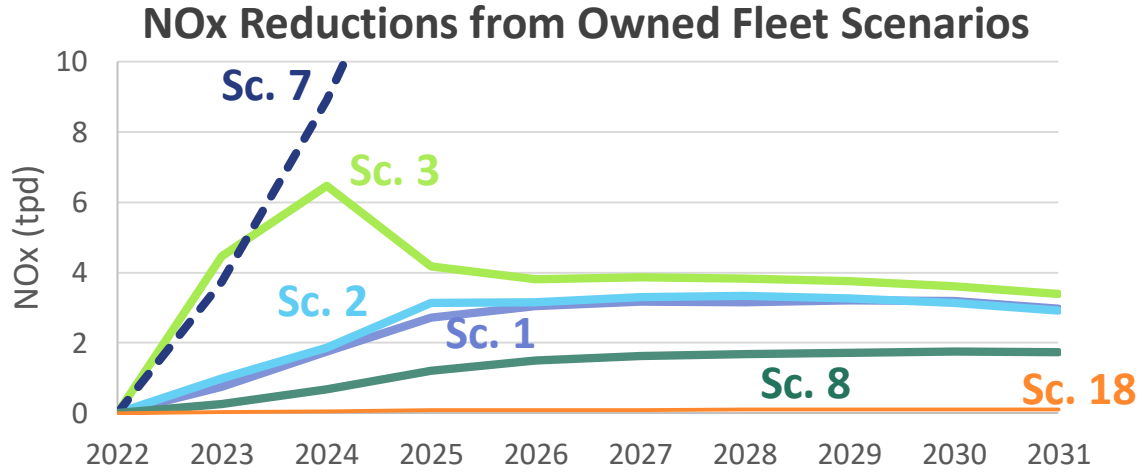


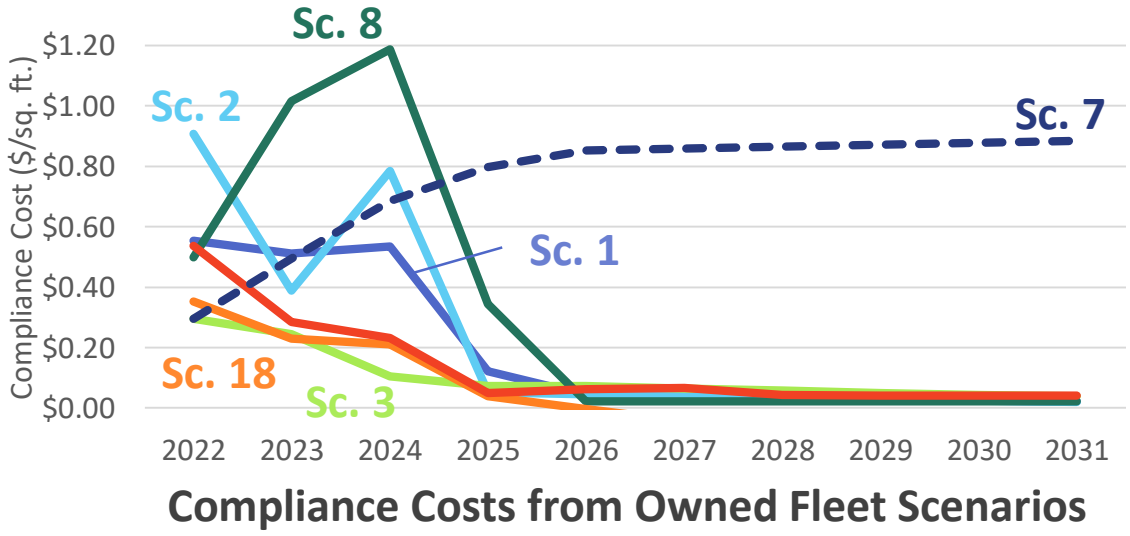
Proposed Stringency = 0.0025

Stringency at 0.0025 – Costs & Emissions Benefits Through Time









Refer to slide 20 for scenario descriptions

Additional Detail with Stringency at 0.0025 – Comparison with Market Conditions

- All but one scenario shows additional regional and local emissions benefit beyond CARB regs *(ACT, Low NOx, HD I/M)*
- Most scenarios do not require greater truck sales than would otherwise occur … but many fewer new trucks would be diesel
  - Highest impact on sales: Scenario 8 (Class 6 NZE purchases/use)
    - 2.5 years of expected sales would occur in 2024 in unlikely event that every warehouse chose this option
      - ~13% turnover of fleet in one year
    - Later years show NZE sales due to PR 2305 as less than normal new sales for this scenario

Points of Comparison

- PR 2305 NOx emissions = ~31 tpd in 2031
  - PR 2305 reductions up to ~22%
- PR 2305 DPM emissions = ~0.26 tpd in 2031
  - PR 2305 reductions up to ~12%

New CARB Rules (ACT, Low NOx, HD I/M) provide an additional ~5-7% reduction from these warehouses

- Total value of goods moving through region* = ~$500 billion
  - PR 2305 median scenario cost is ~0.02%
- Operating costs of warehousing ~$25/sf - ~$90/sf
  (labor + rents + taxes + utilities)
  - PR 2305 median scenario cost is ~0.2% - 0.7%

* https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_goods-movement.pdf

Upcoming Process

- Early 2021- Release of Preliminary Draft Staff Report & release Draft Environmental Analysis (CEQA)
  - Will include detailed analysis and discussion of information in slides