

Societal Benefits of Managing Facility Cost of Ownership

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AGENDA

- TCO Background
- What Impacts TCO
- Case Studies
- Modeling Tool

TOTAL “COST” OF OWNERSHIP (TCO)



Economic

Initial & long term cost
Financial sustainability

Community

Generational commitment
Facility equity

Education

Preserve education funds
Impact of poverty

Environment

Energy
Carbon
Waste

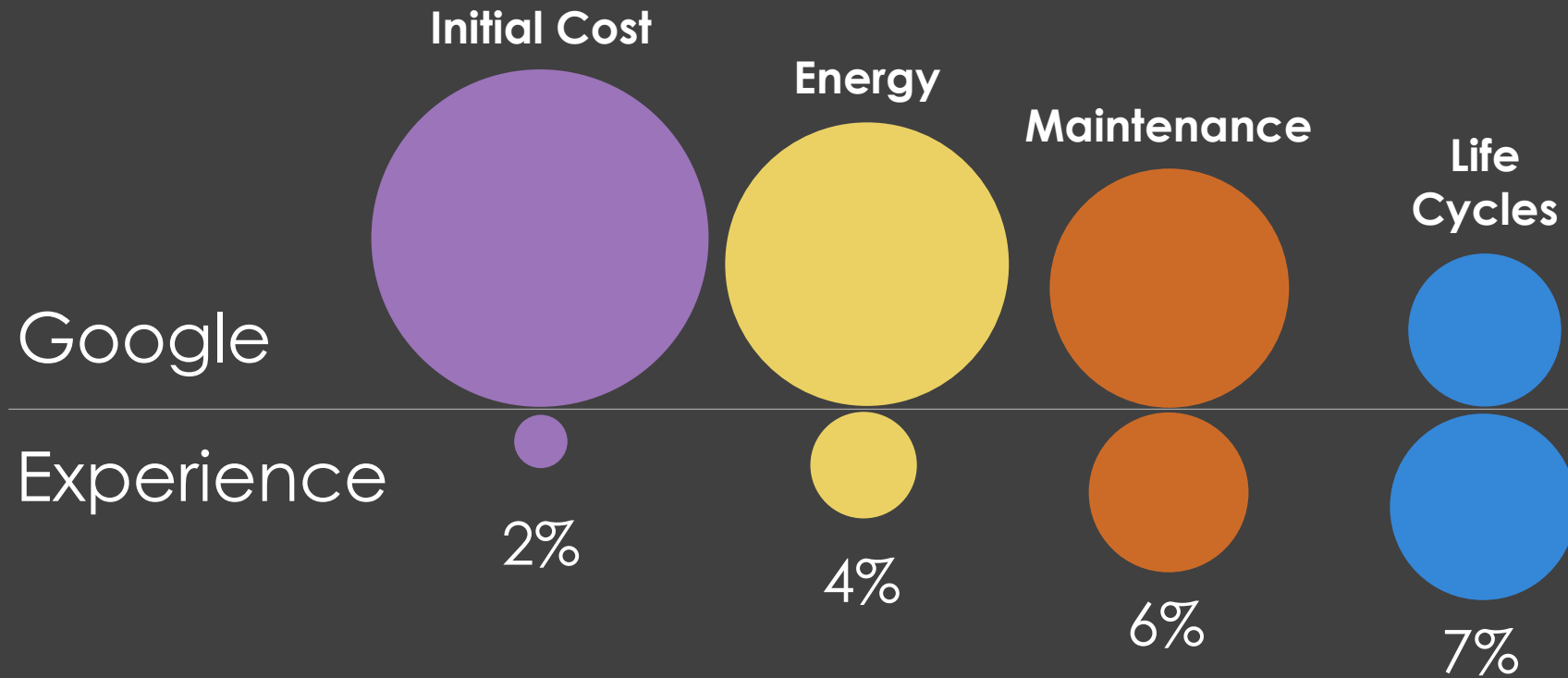
ECONOMIC COST OF OWNERSHIP

An iceberg floating in the ocean. The small tip above the water represents the initial construction cost (10-20%), while the much larger, submerged part represents the ongoing costs of ownership (80-90%). The background is a clear blue sky with some clouds and a calm sea.

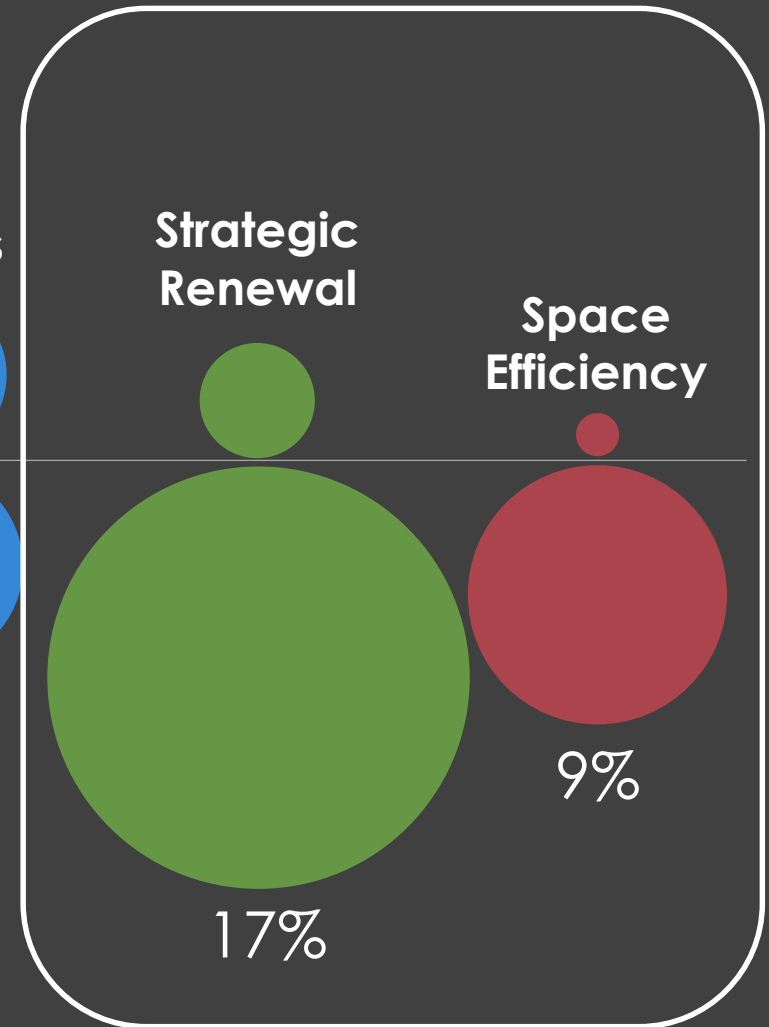
10-20%
Initial Construction

80-90%
Bond Interest
Maintenance
Renewal
Adaption

WHAT IMPACTS TCO?



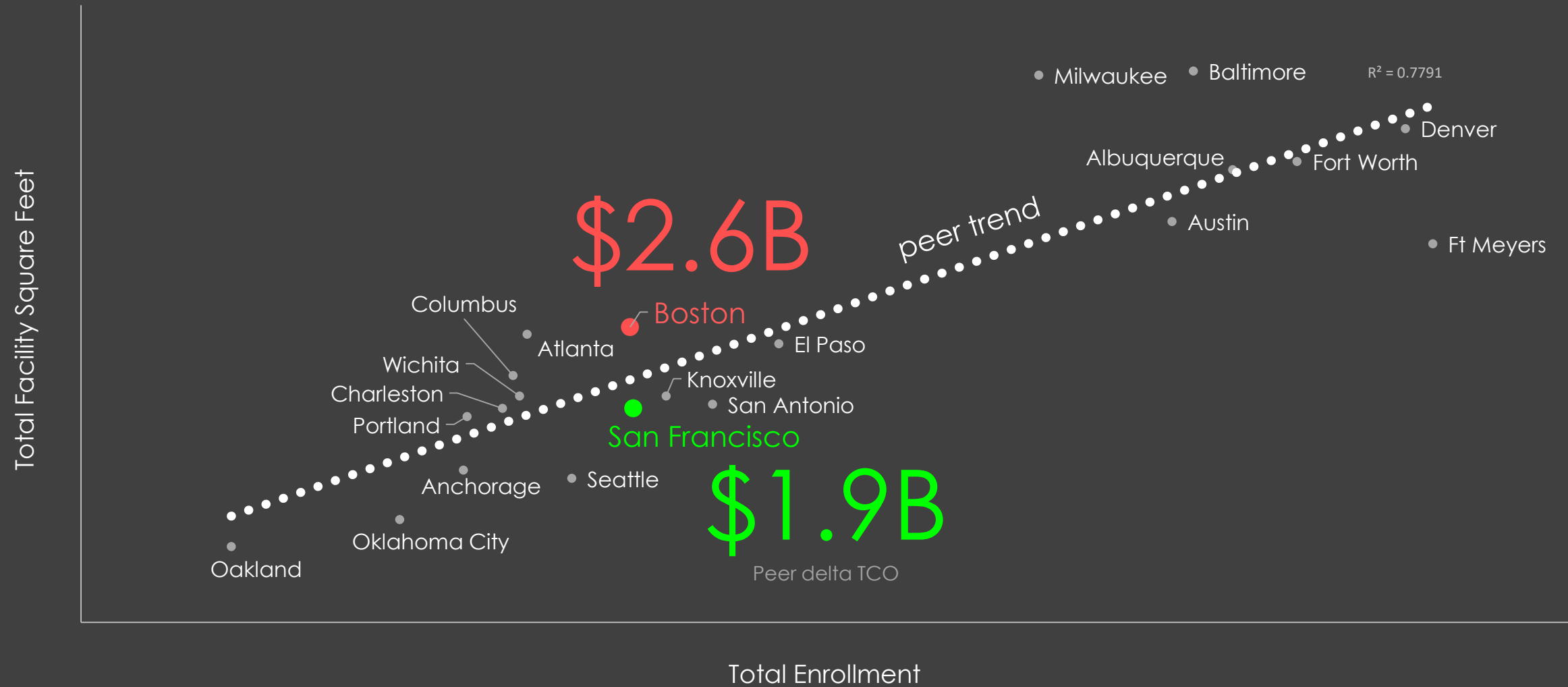
Case Studies





Space Efficiency

DISTRICT FACILITY SF & TCO





\$4.5B

Multi-generational Difference

SHARED COMMUNITY SPACE



\$425M

30-year cost of ownership avoidance

124

Annual Teacher Salary Equivalents

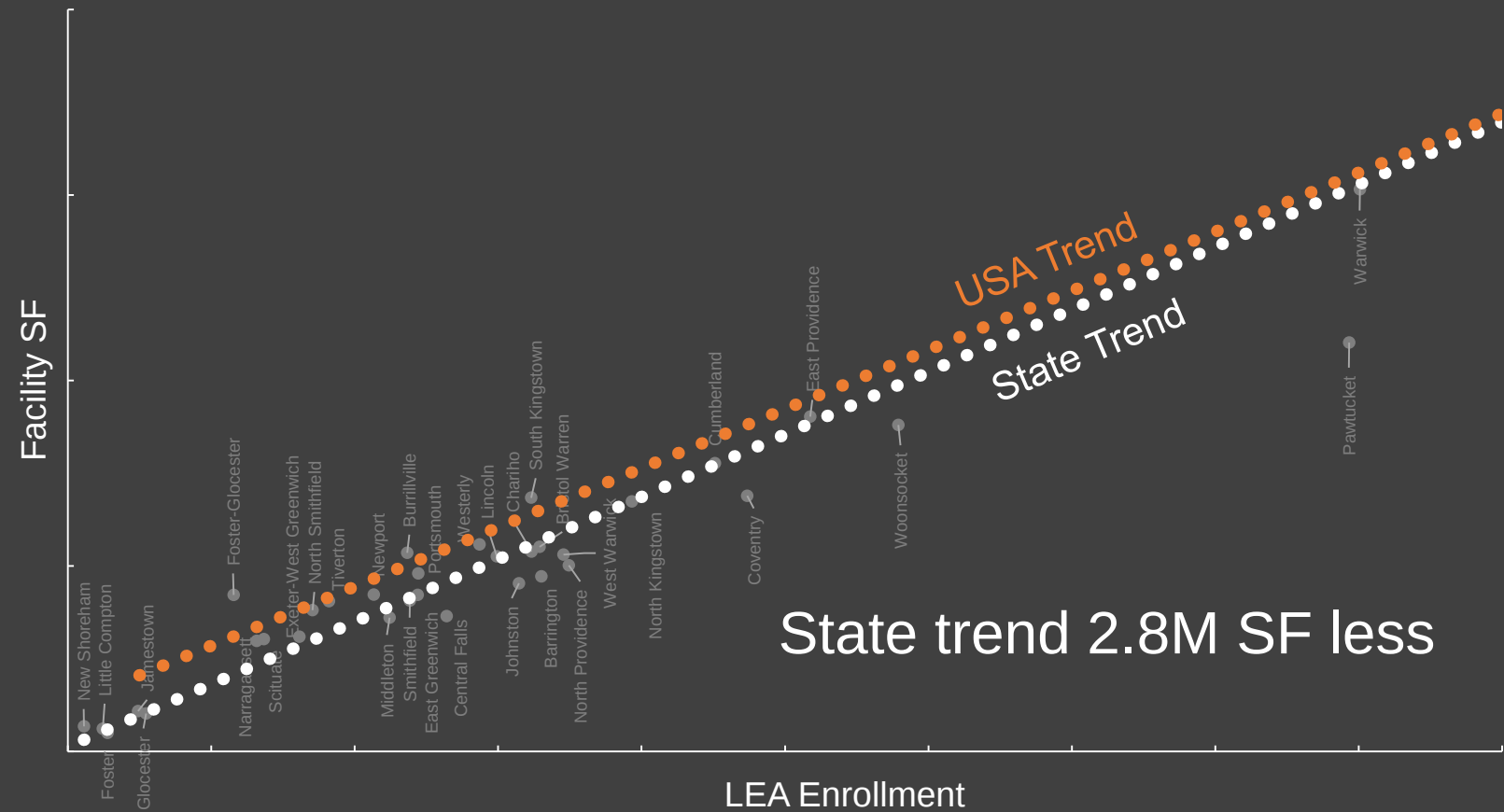


367

Annual Household Carbon Equivalents



RHODE ISLAND SCHOOL SPACE EFFICIENCY



\$3.1B



797



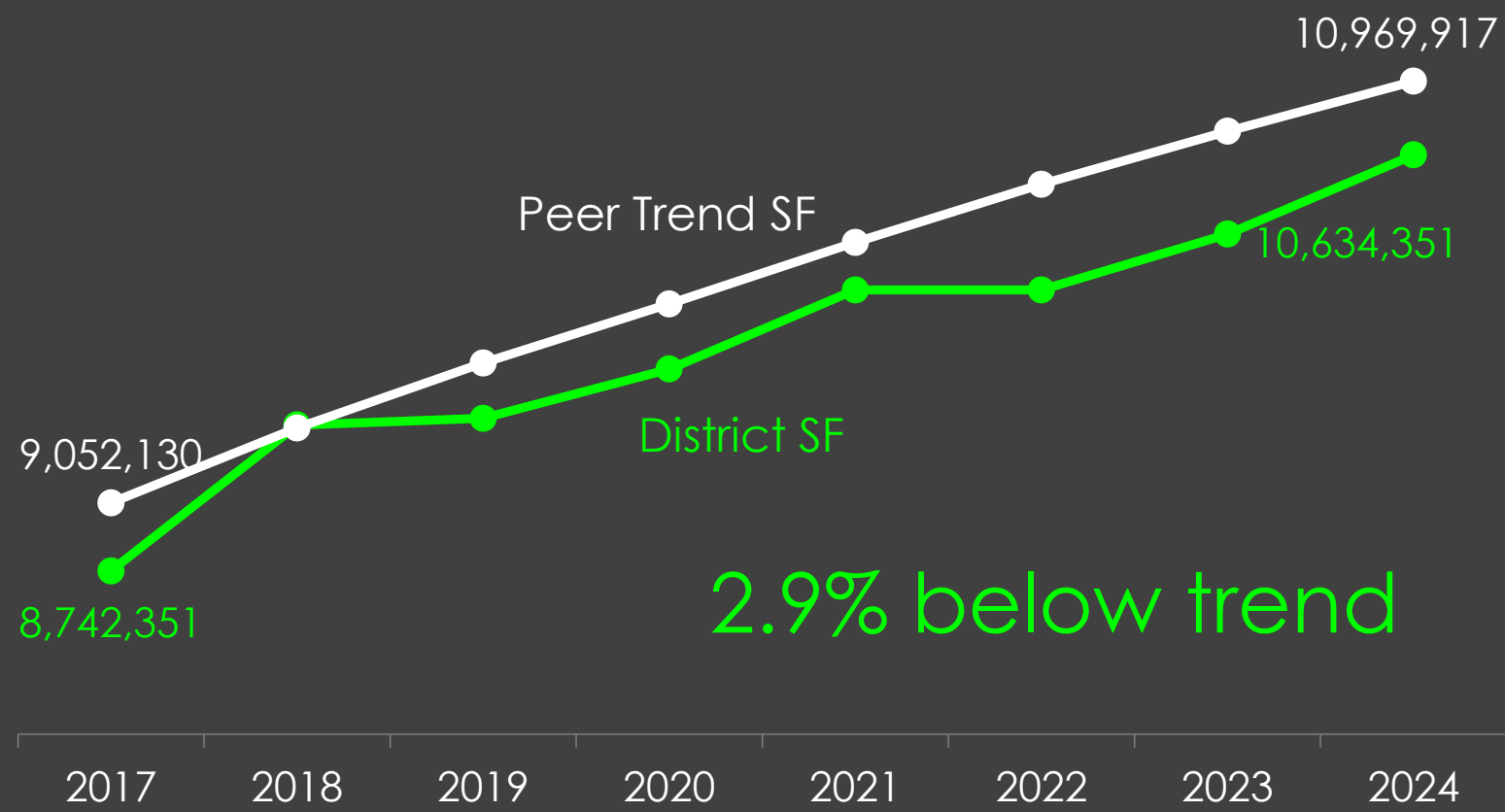
6,459

364

Truck Loads



DISTRICT SPACE



\$233M



107



712

4

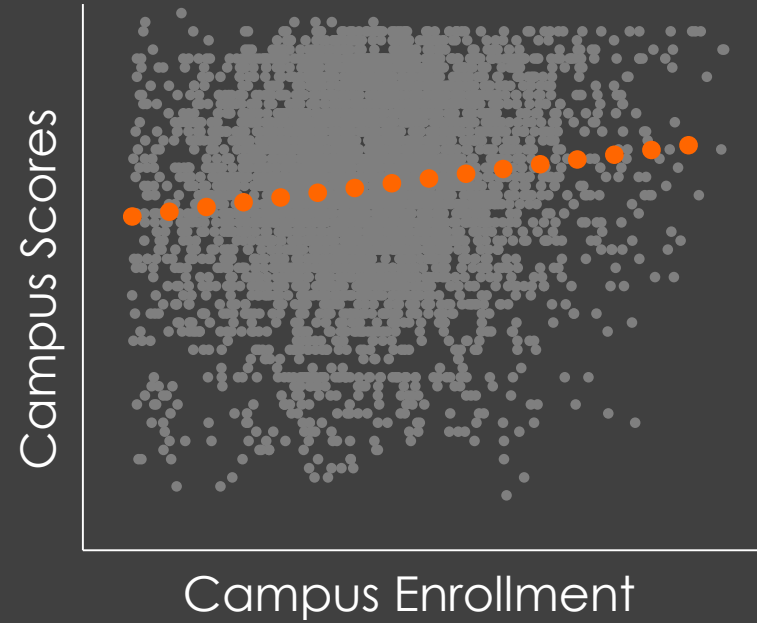
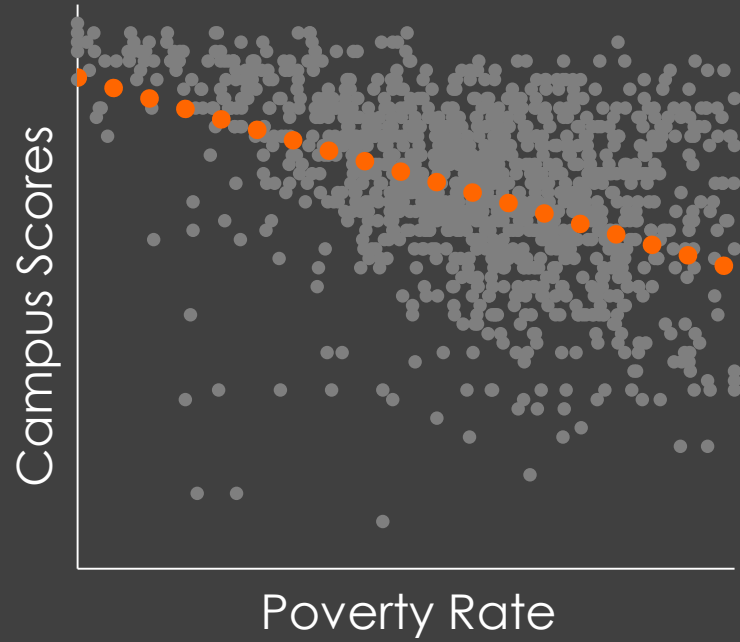
Elementary School Energy Equivalents



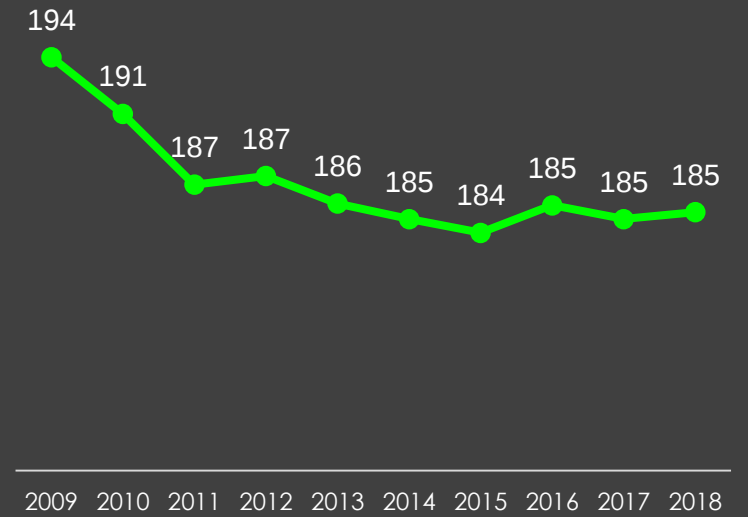


POVERTY & STUDENT ACHIEVEMENT

POVERTY & STUDENT ACHIEVEMENT IN TEXAS

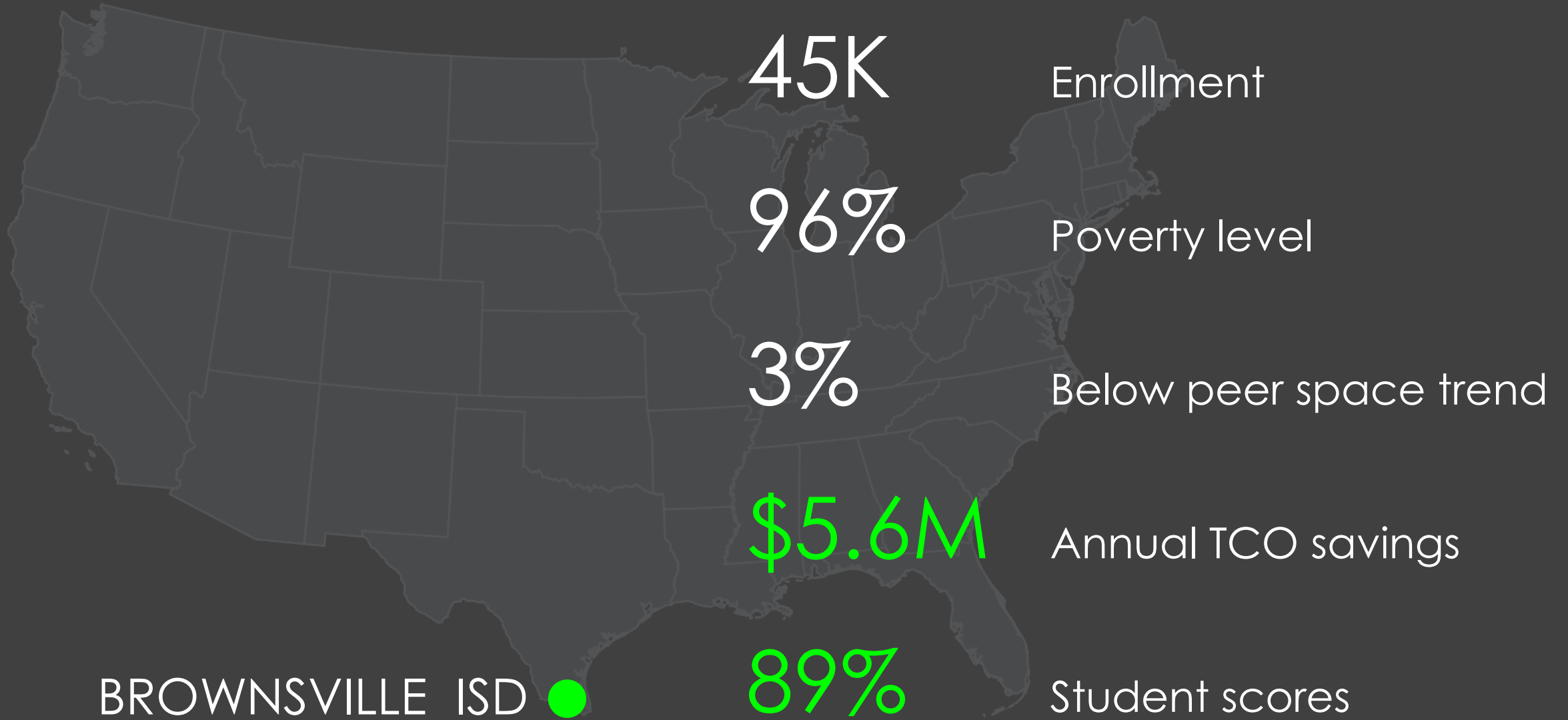


SF per Student Trend



\$1.6B At-risk Annual State Programs

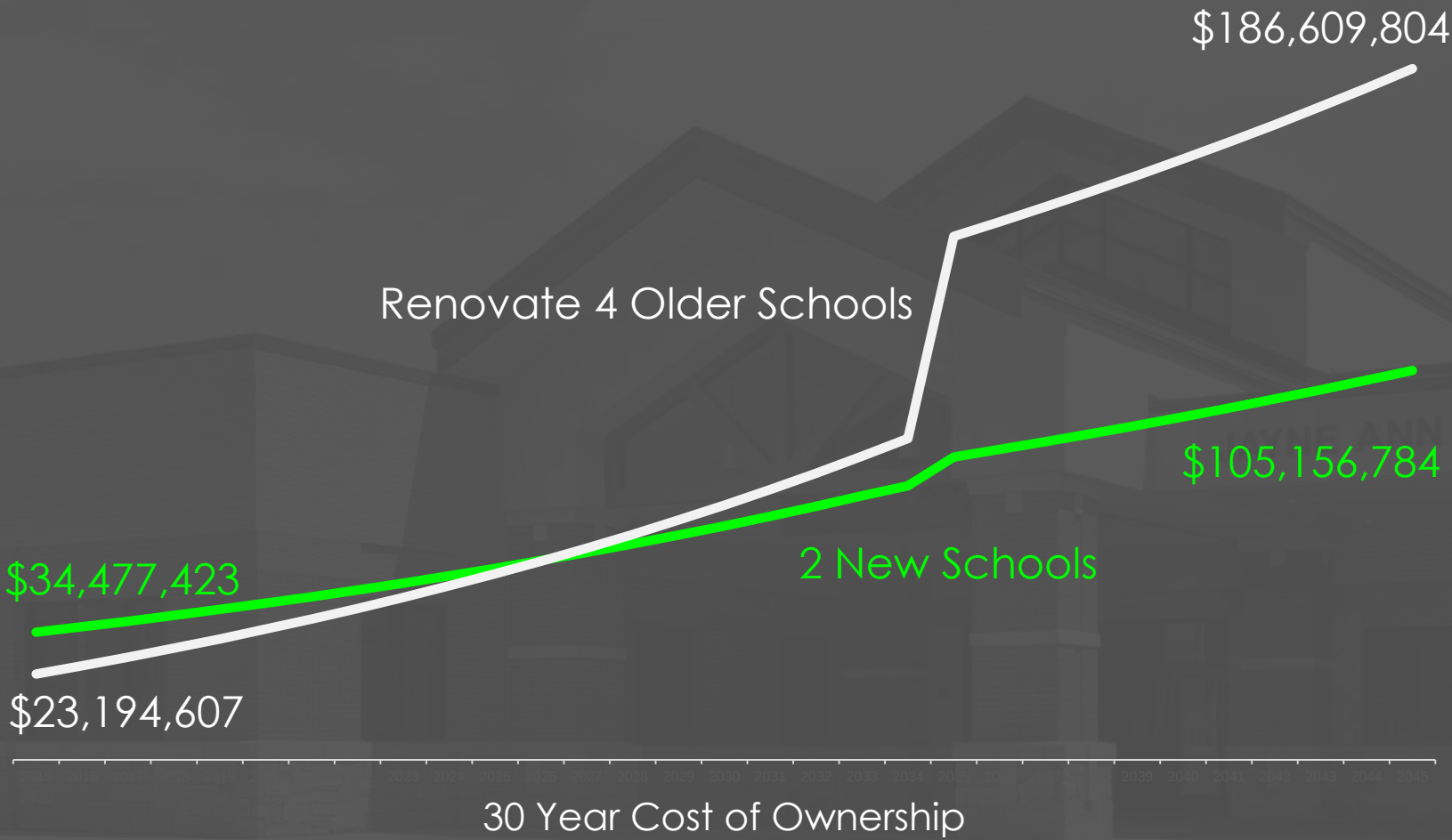
\$1.1B Annual cost avoidance





Strategic Renewal

RENOVATE OR REPLACE



\$81M

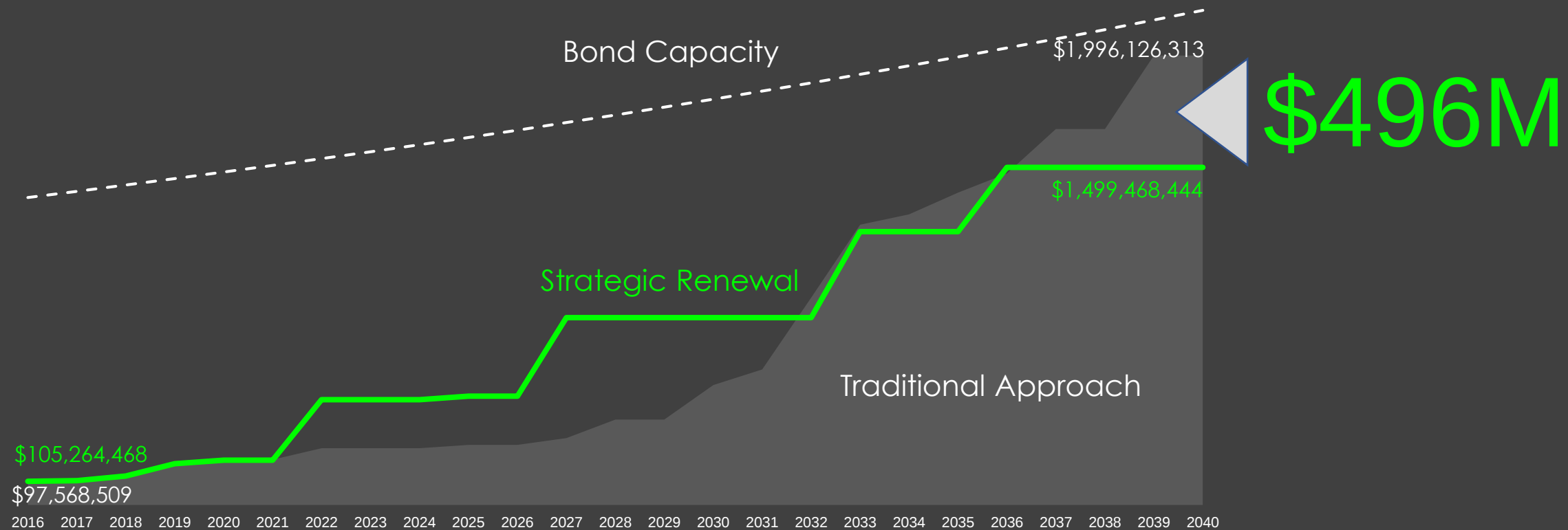


34

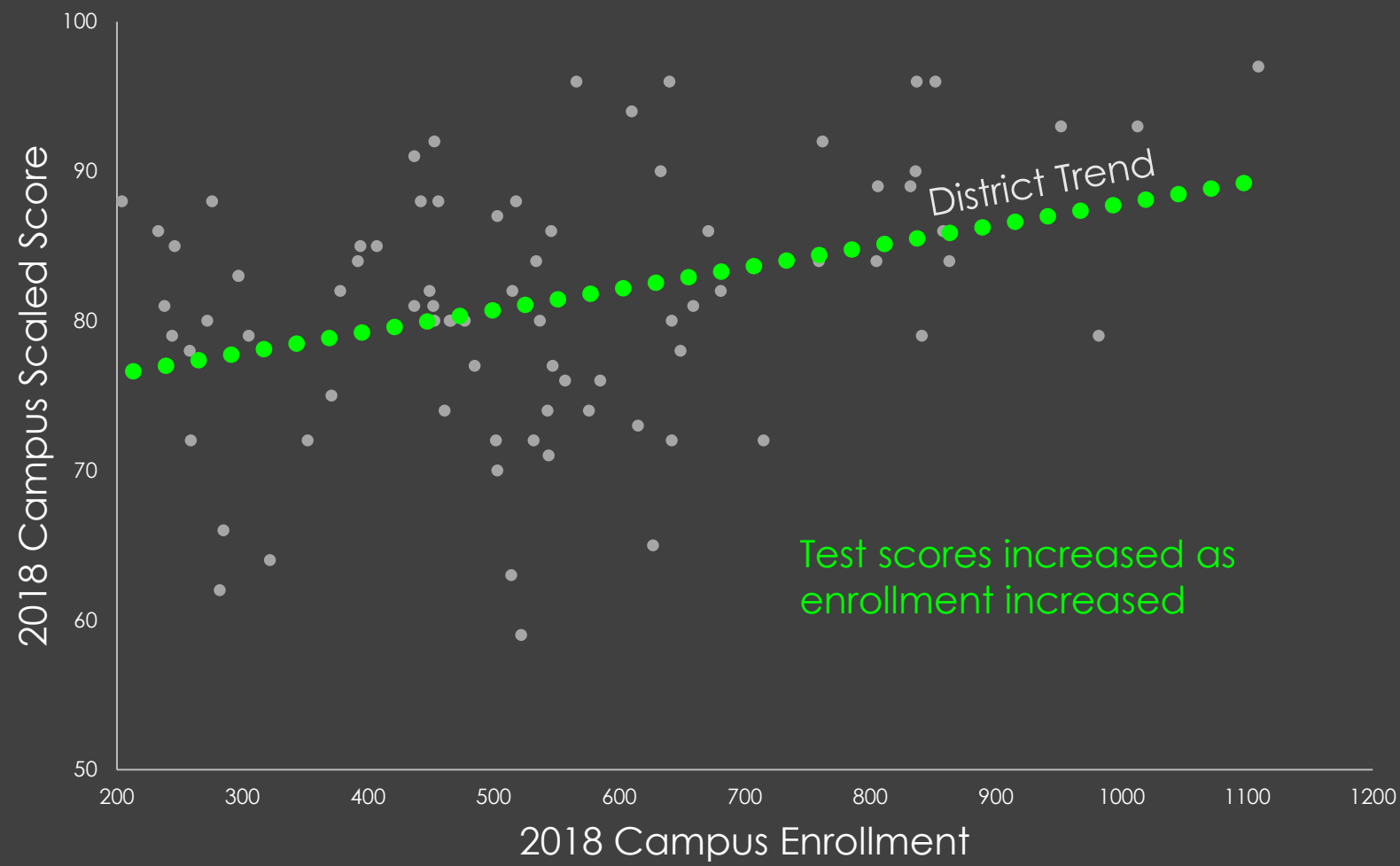


1

DEMAND SMOOTHING & FINANCIAL SUSTAINABILITY



CAMPUS SIZING



750 vs 550
student campuses



\$451M



142



7

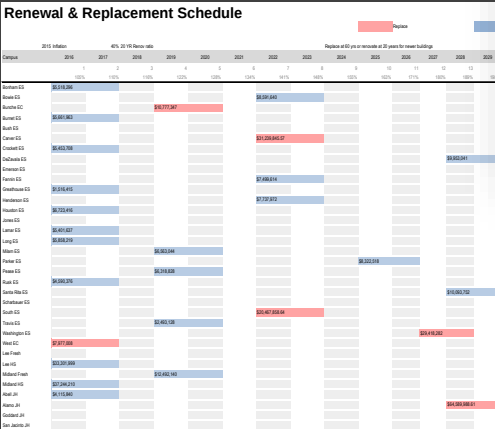
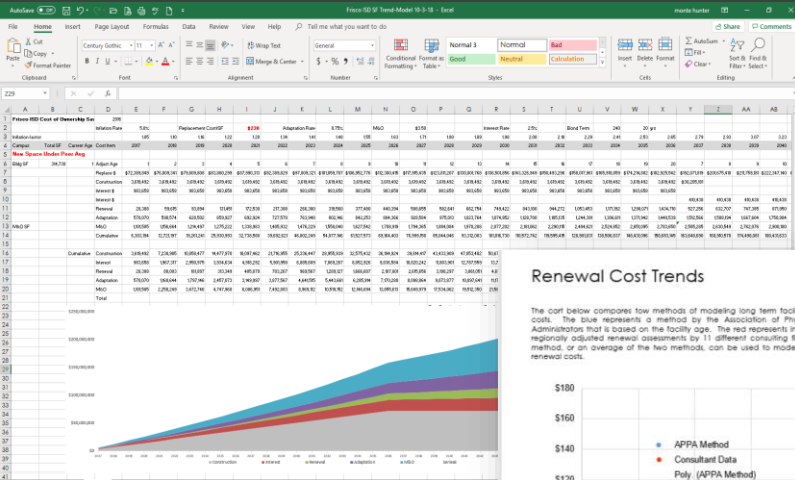
TCO MODELING TOOL

From 10,000 feet

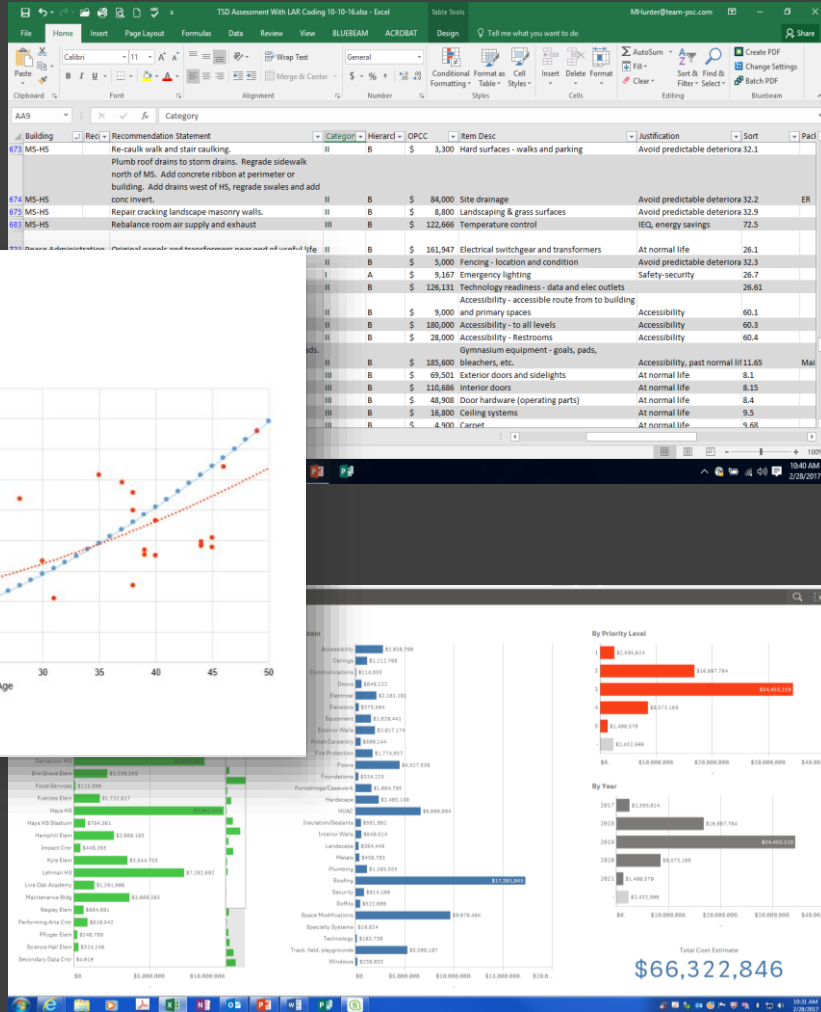
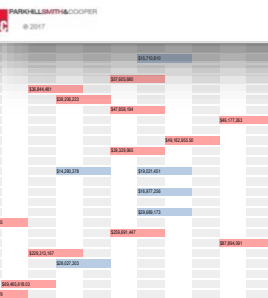
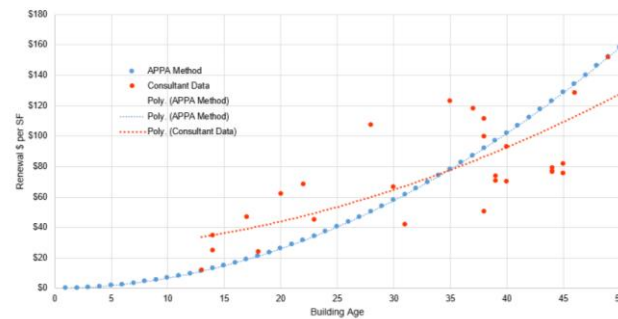


TCO ANALYTICS

VARIABLES



The chart below compares two methods of modeling long term facility renewal costs. The blue represents a method by the Association of Physical Plant Administrators that is based on the facility age. The red represents inflation and regionally adjusted renewal assessments by 11 different consulting firms. Either method, or an average of the two methods, can be used to model long term renewal costs.



- Regional cost
- Inflation
- Bond terms
- Adaption rate
- Facility age
- Renewal ratio
- Maintenance cost
- SF per student

TCO EXCEL WORKSHEET . . . MID-RANGE MODEL

Facility SF Peer Benchmark

District Enrollment	20,000
Peer Trend District SF	3,205,989

$$= 150.6 \times \text{enrollment} + 193,989$$

30 year TCO

Building SF	85,000
Facility Age	25
TCO per SF	\$903
30 year TCO	\$76,755,000

$$= 22 \times \text{facility age} + 353$$

$$= \text{TCO per SF} \times \text{Building SF}$$

WORKSHEET QUALIFICATIONS

SPACE

- USA mid-range
- General district space guidance
- Districts > 2,000 enrollment
- All facility SF including portables
- Refine with state & regional trends

TCO

- Mid-range conceptual
- Buildings only, no site work
- Use adjusted building age
- Can vary 40% either way
- Refine with 8 variables

CONCLUSION

High Quality
+
Space Efficiency
+
Strategic Renewal

TCO Management & Societal Benefits



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