
AUROS
GROUP
THE
POWER OF
EXISTING
BUILDINGS

BUILDING PERFORMANCE.
CONNECTED.

Design and retrofit the highest performing buildings at the lowest possible cost.

OUR VISION

THEORY INTO PRACTICE

RELATED TO BUILDING PERFORMANCE, WHICH OF THE FOLLOWING

DO YOU SPEND THE MOST TIME CONSIDERING?"

DISCUSSION

MOVING FROM THEORY . . .

SET GOALS

DESIGN

CONSTRUCTION

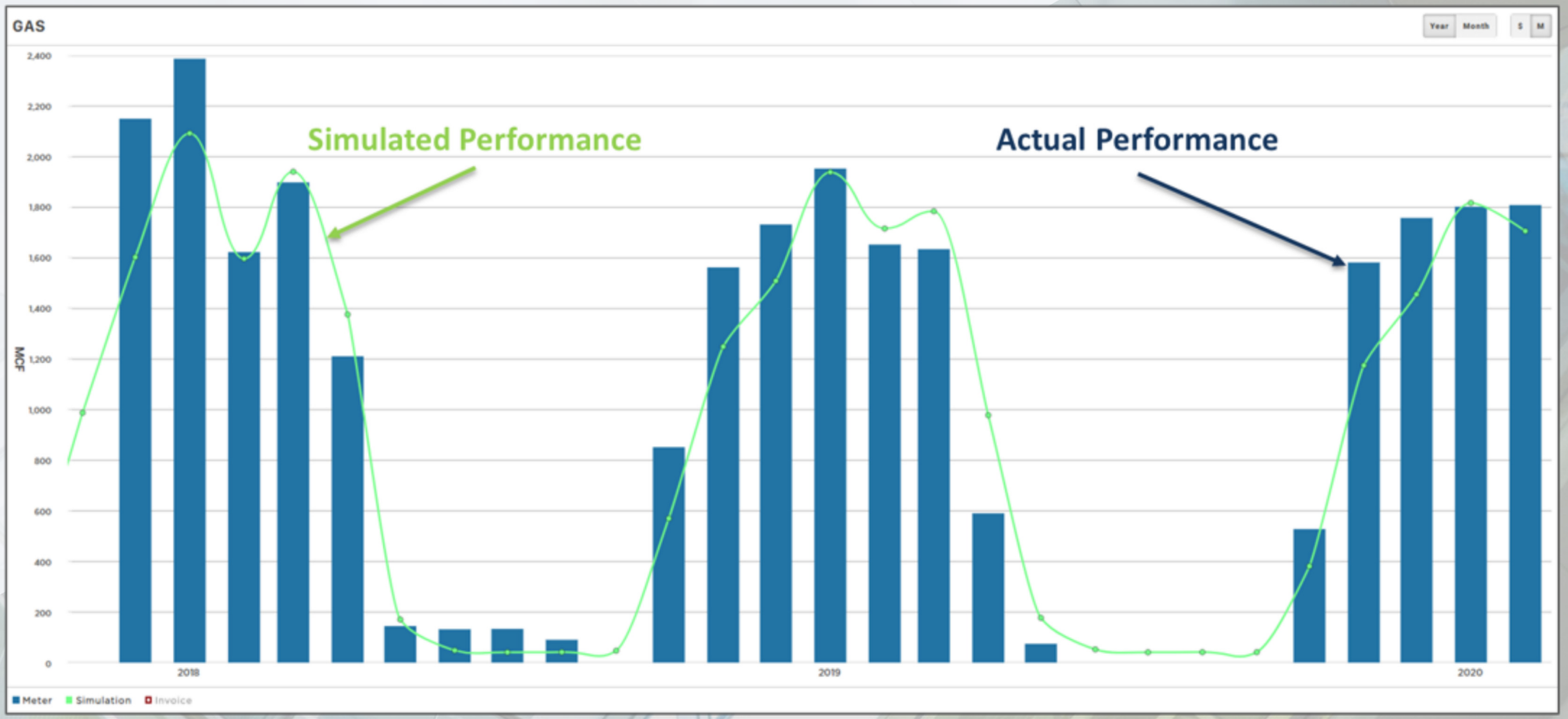
OPERATIONS

MEASURE PERFORMANCE

. . .TO PRACTICE

MEASURING PERFORMANCE

Putting theory into practice provides proof



EVOLUTION OF SUSTAINABLE BUILDING: 1960-2020

ACTIVISM

Conservation

- Environmental Defense Fund
- Greenpeace
- Rachel Carson's *Silent Spring*

STANDARDS

Prescriptive Methods

- Green Building Initiative
- US EPA Energy Star
- USGBC LEED

PERFORMANCE

Certification Programs

- Living Building Challenge
- Passive House
- RESET Air
- WELL Building

ACCOUNTABILITY

Proof of Performance

- Climate Change Acts
- Energy Disclosure Ordinances
- Stretch Codes

Proof of performance is required.

THE NEW CHALLENGE:

DEFEND BUILDING PERFORMANCE.

INTEGRATE, ALIGN TO GOALS

REPEAT

Source: Aveus, Division of Medecision

The path to integration and alignment

TECHNOLOGY

The path to integration and alignment

SET GOALS

CREATE SIMULATIONS

MEASURE PERFORMANCE

DOES YOUR ORGANIZATION HAVE STATED

BUILDING PERFORMANCE GOALS?”

DISCUSSION

DEFINE SUCCESS WITH METRICS

GOALS

What you measure

LIGHT, AIR QUALITY, ENERGY

- Exterior Noise Intrustion
- Carbon Dioxide
- Ambient Light
- Airtightness
- Energy
- Particulate Matter
- Water
- Total VOCs

PROGRAMS

- WELL (International WELL Building Institute)
- PHIUS (Passive House Institute US)
- RESET (Healthy Buildings)
- Passive House Institute
- LEED Certified (U.S. Green Building Council, USGBC)
- Living Building Challenge
- fitwel
- Green Globes

GOALS

What you measure

DEFINING GOALS: IN PRACTICE

OWNER'S PROJECT REQUIREMENTS

- Energy
- Airtightness
- Water
- Carbon Dioxide
- Particulate Matter

Targets and Goals	
SUSTAINABILITY PROGRAM GOALS	
ENERGY	35% Lower than National Median (CBECS Site EUI)
Site EUI	30.0 kBtu/sf/yr
BUILDING ENCLOSURE	
Thermal Envelope *(Current Design)*	Walls: R ≥ 15.6 hr. ft^2 F/BTU, Roofs: R ≥ 18.0 hr. ft^2 F/BTU
Windows Installed *(Current Design)*	U ≤ 0.55 BTU/hr. ft^2 F
Airtightness	≤ 1.0 ACH_{50}
INDOOR AIR QUALITY	
Temperature	Meet ASHRAE Standard 55-2013 Section 5.3 Standard Comfort Zone Compliance & 5.4 Adaptive Comfort Model per WELL Building
Humidity	Between 30% and 60%
Carbon Dioxide (CO2)	< 600 ppm
Carbon Monoxide (CO)	< 9.0 ppm
Formaldehyde	< 27 ppb (< 0.027 ppm)
Ozone (O3)	< 51 ppb (< 0.051 ppm)
Particulate Matter 2.5 (PM2.5)	< 12 $\mu g/m^3$
Particulate Matter 10 (PM10)	< 50 $\mu g/m^3$

INITIAL INTEGRATION & ALIGNMENT

GOALS

What you measure

Continuous modeling meets continuous estimating.

SIMULATIONS

Technology reduces risk

DESIGN

Digital Twin

CONSTRUCTION

Control Estimate

SIMULATIONS

Technology reduces risk

DESIGN

Digital Twin

ESTIMATE

Construction costs

CONSTRUCTION

Control Estimate

Description	Quantity	Unit	Material	
			Unit	Total
3"	98,272	Sf	0.45	44,222.41

Labor					
Hrs	Type	HR Rate	Unit/Rate	Total	Tot Hrs
0.010	C	59.99	0.60	58,953.39	982.7

Total Costs	
Unit	Total
1.05	103,175.80

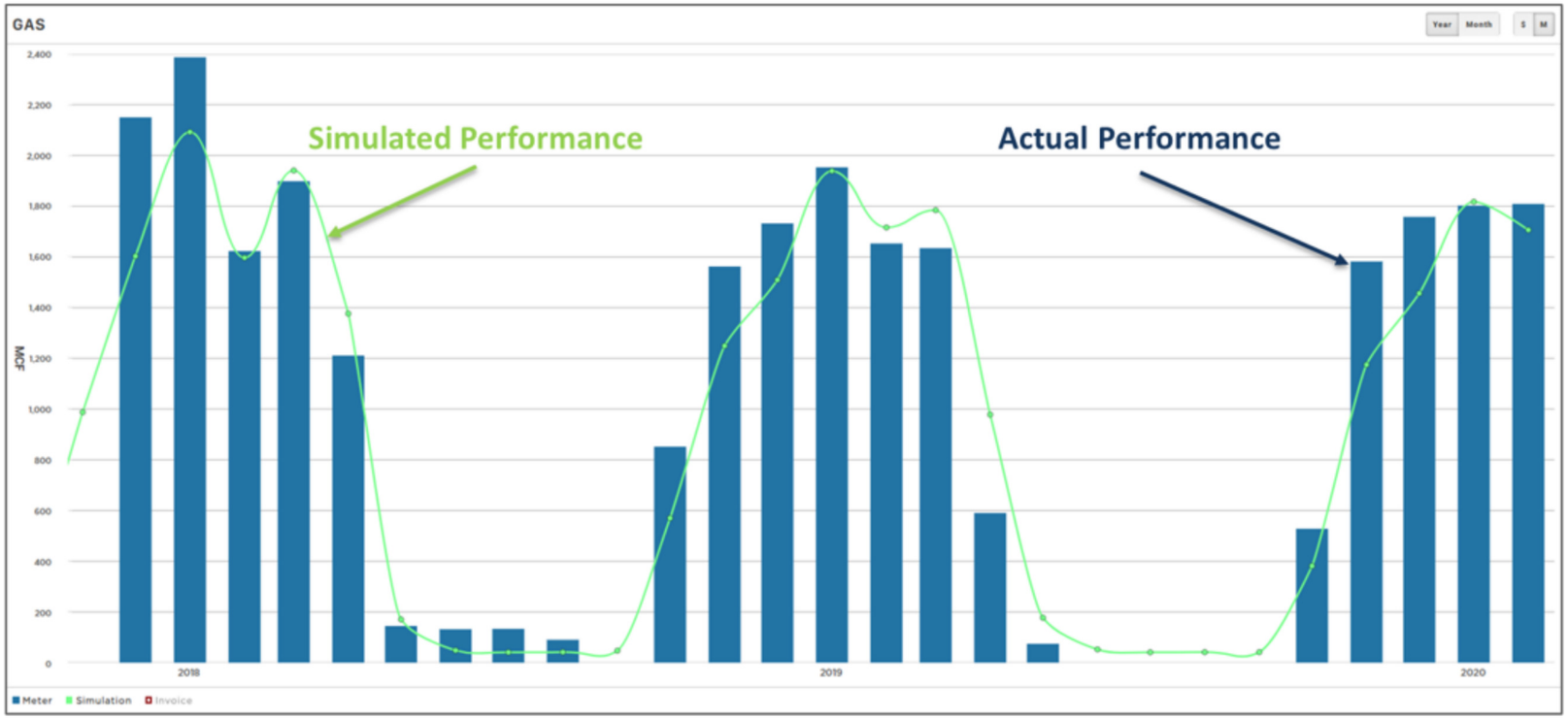
DOES THE BUILDING YOU SPEND THE MOST TIME IN

HAVE A BUILDING PERFORMANCE DASHBOARD?”

DISCUSSION

PERFORMANCE

The Proof



BUILD USE CASES TO CONNECT BUILDING GOALS TO BUILDING PERFORMANCE

CASE STUDY

EAST LIBERTY PRESBYTERIAN CHURCH

GOALS

EAST LIBERTY PRESBYTERIAN CHURCH

OWNER'S PROJECT REQUIREMENTS

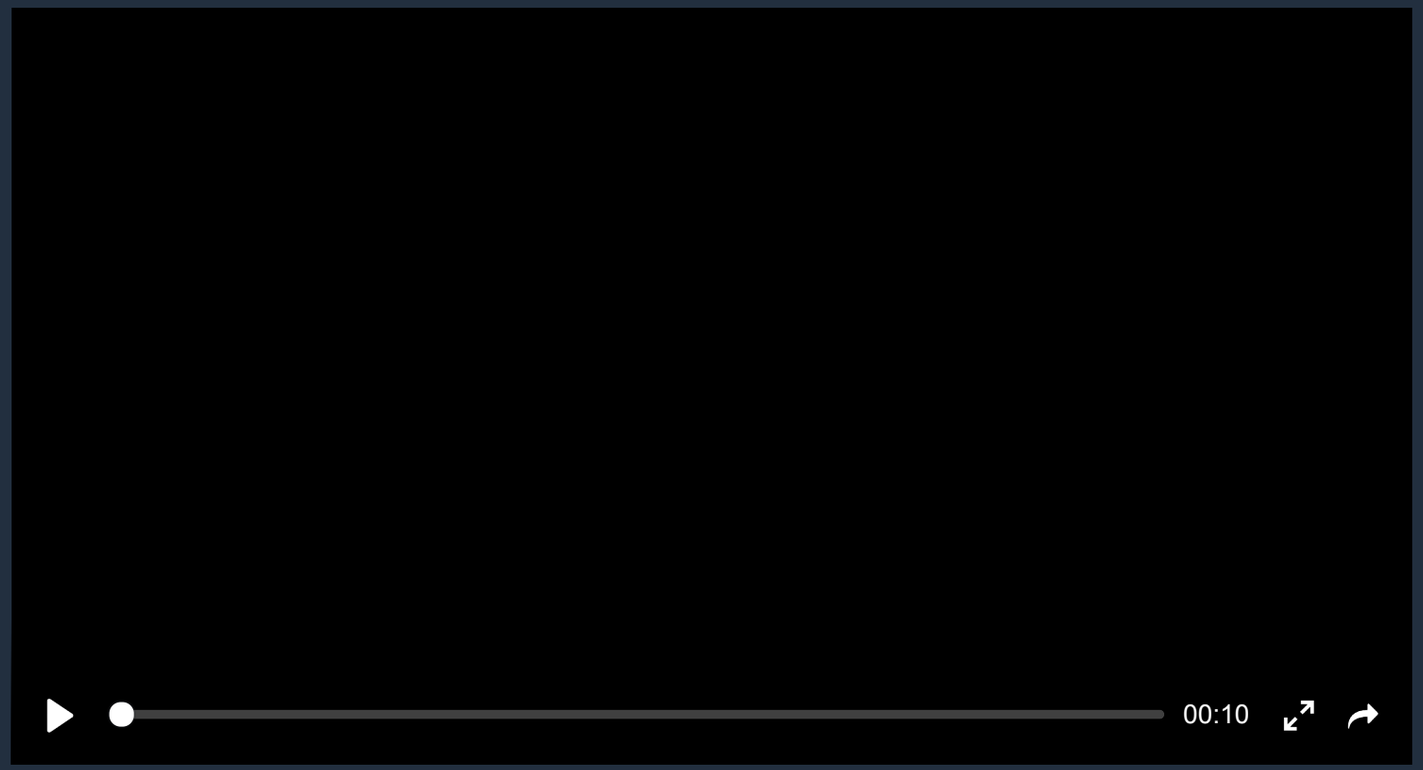
- Energy
- Water
- Carbon Dioxide
- Particulate Matter
- Total VOCs

Targets and Goals	
SUSTAINABILITY PROGRAM GOALS	RESET Air Certification, Passive House Strategy
ENERGY	
Site EUI	58.6 kBtu/sf/yr, meet the 2030 Challenge (Year 2030)
INDOOR AIR QUALITY	
Temperature	Meet ASHRAE Standard 55-2013 Section 5.3 Standard Comfort Zone Compliance and 5.4 Adaptive Comfort Model
Humidity	Between 30% and 50%
Carbon Dioxide (CO2)	< 600 ppm
Particulate Matter 2.5 (PM2.5)	< 15 µg/m^3
Particulate Matter 10 (PM10)	< 50 µg/m^3
Total Volatile Organic Compound (TVOC)	< 0.4 mg/m^3 (< 400 µg/m^3)
Ventilation Rate	30% more outdoor air than required by ASHRAE 62.1-2013

DESIGN

EAST LIBERTY PRESBYTERIAN CHURCH

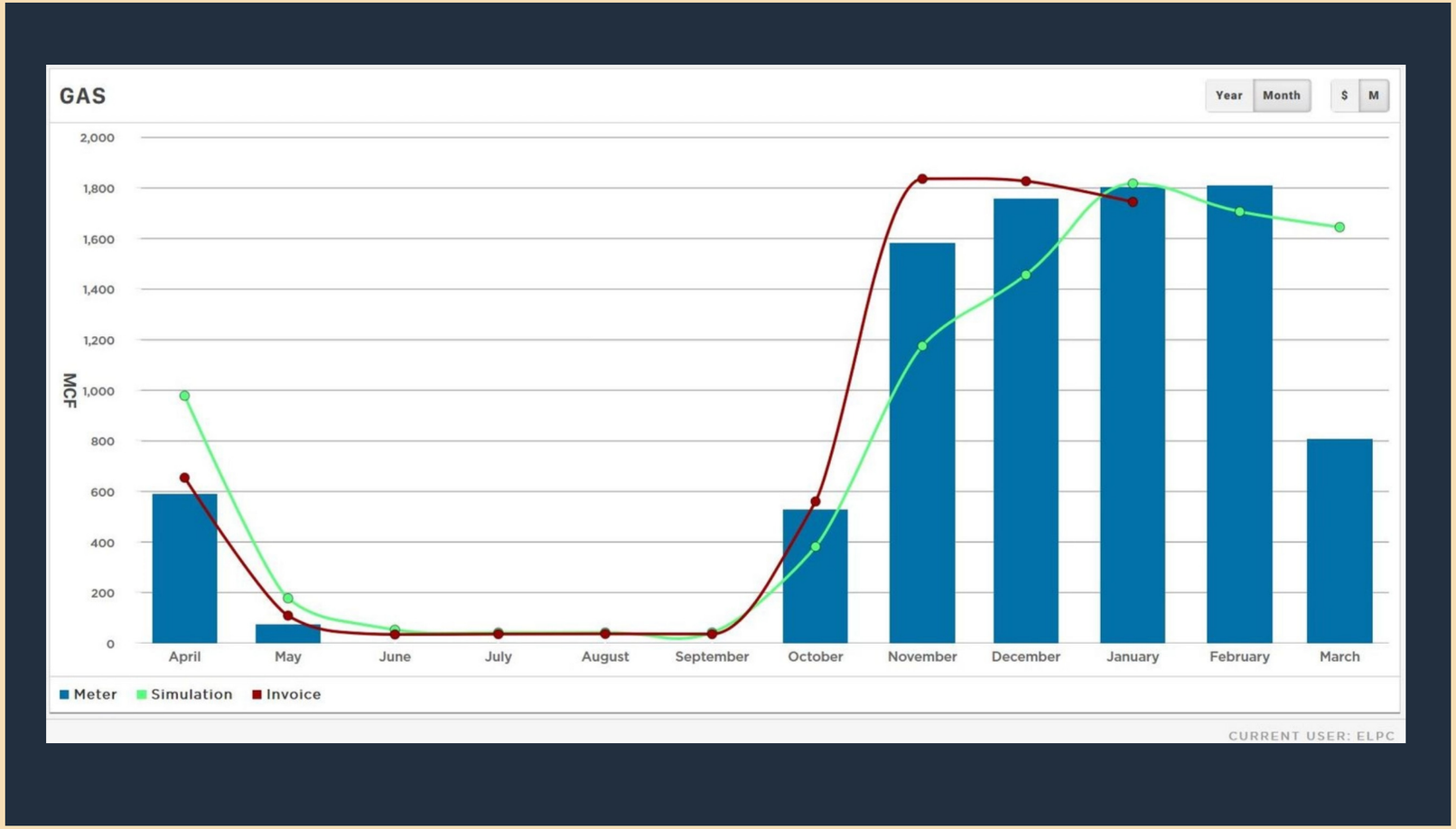
DIGITAL TWIN



PERFORMANCE

EAST LIBERTY PRESBYTERIAN CHURCH

DASHBOARD



BUILDING SCIENCE
meets
SMART BUILDINGS
meets
BEST PRACTICES

PROVEN
PERFORMANCE

CONCLUSION

CAN EXISTING BUILDINGS SAVE THE WORLD?

PROVEN OUTCOMES

- Lowered costs
  reduces fuel poverty.
- Equitable access to indoor air quality
  improves health.
- Reduced emissions
  combats climate change.

SUSTAINABLE DEVELOPMENT

COVID-19: OPTIMIZING PERFORMANCE

fitwel®

https://centerforactivedesign.org/5-ways-to-optimize-buildings

"High-performance buildings are key to achieving the UN's 2030 Agenda for Sustainable Development. Most of today's buildings will still be in use in 2050. . . . as shown in this book, the capability to meet the challenge exists today."

-- Scott Foster, Director, Sustainable Energy

United Nations Economic Commission for Europe

(UNECE)

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