NOTICE OF WORK MEETING OF THE CITY COUNCIL OF THE CITY OF ST. GEORGE, WASHINGTON COUNTY, UTAH

Public Notice

Public notice is hereby given that the City Council of the City of St. George, Washington County, Utah, will hold a work meeting in the City Council Conference Room at the St. George City Hall located at 61 South Main Street, St. George, Utah, on Thursday, April 2, 2026, commencing at 3:00 p.m.

The agenda for the meeting is as follows:

1. **Update regarding Economic Development.**
2. **Discussion regarding short-term rentals.**
3. **Discussion regarding signs.**
4. **Discussion regarding fees for the Sunbowl.**
5. **Reports from Mayor, Councilmembers, and City Manager.**
6. **Request a closed meeting to discuss litigation, security, property acquisition or sale, or the character and professional competence or physical or mental health of an individual.**

Brenda Hatch, Deputy City Recorder

3/27/2026
Date

REASONABLE ACCOMMODATION: The City of St. George will make efforts to provide reasonable accommodations to disabled members of the public in accessing City programs. Please contact the Human Resources office at 435-627-4674, at least 24 hours in advance if you have special needs.

Economic Development Update

THE BRIGHTER SIDE

Table 11. Top 10 U.S. Metro Areas by Percent Growth: July 1, 2024, to July 1, 2025 (Population of 20,000 or more in 2024 and 2025)

Rank	Metro Area	April 1, 2020 (Estimates Base)	July 1, 2024	July 1, 2025	Percent Growth
1	Ocala, FL	375,892	427,995	442,660	3.4
2	Myrtle Beach-Conway-North Myrtle Beach, SC	351,036	414,307	427,551	3.2
3	Spartanburg, SC	355,230	396,728	407,656	2.8
4	Lakeland-Winter Haven, FL	725,042	851,434	874,790	2.7
5	Punta Gorda, FL	186,823	211,456	217,212	2.7
6	Huntsville, AL	491,721	542,122	556,444	2.6
7	Wilmington, NC	422,602	480,374	492,772	2.6
8	St. George, UT	180,284	208,431	213,670	2.5
9	Fayetteville-Springdale-Rogers, AR	546,709	607,433	622,177	2.4
10	Raleigh-Cary, NC	1,413,995	1,558,927	1,595,720	2.4

Source: U.S. Census Bureau, Vintage 2025 Population Estimates

SMALL CITIES' RANKINGS

TIER 1

1. St. George

ST. GEORGE, UT

St. George, UT, ranks as the top-performing small city, after placing second last year and maintaining a steady presence in the top 10 for the past decade. Its rise reflects one of the fastest-growing economies among all small metros, with job growth from June 2024 to June 2025 almost double its state's rate.[20] The metro ranks second among small cities in five-year job growth and fourth in five-year wage growth. This growth comes with a 4.1 percent increase in short-term employment from July 2024 to July 2025, which underscores the metro's sustained labor market momentum.

Much of St. George's labor market strength stems from the growth of its high-tech sector. The metro ranked first among small cities in five-year high-tech growth, with its real GDP increasing by 106.3 percent from 2019 to 2024, and by 8.6 percent in 2024 alone. However, St. George's job growth extends beyond high-tech. In 2024, employment in the metro's financial activities grew by 6.0 percent, in construction by 5.4 percent, and in education and health services by 4.8 percent, all above the national industry aggregates. The education and health services sector accounts for the largest share (17.1 percent) of St. George's employment. Other key sectors include leisure and hospitality and government, underscoring St. George's balanced and diversified economic base.

Housing affordability remains one of St. George's main challenges, although conditions have started to improve. In 2024, around 30.3 percent of households spent more than a third of their income on housing—a 2.5 percent improvement from the previous year—placing the metro 153rd in housing affordability. St. George's overall cost of living has also increased, reaching 7.7 percent above the US average in 2025.[21]

Beyond affordability, environmental and resource pressures shape the region's outlook. Water availability is a central concern, and wildfire risk is increasingly salient in Washington County.[22] As the metro's population continues to grow, expanding by an estimated 5.7 percent through 2030, St. George's continued outperformance will rely on tourism, hospitality, and health-care services, alongside the metro's ability to satisfy the population-driven housing demand.

Gained 1 rank	Indicator	Rank
Job growth (2019–24)	23.7%	2
Job growth (2023–24)	3.2%	7
Wage growth (2019–24)	57.4%	4
Wage growth (2023–24)	8.1%	13
Short-term job growth (7/2024–7/2025)	4.1%	5
High-tech GDP growth (2019–24)	106.3%	1
High-tech GDP growth (2023–24)	8.6%	22
High-tech GDP location quotient	0.55	105
Number of high-tech industries with LQ>1	4	67
Households with broadband	94.6%	21
Households with affordable housing costs	69.7%	153
Community resilience	82.5%	30
Gini index (income inequality)	43.6	62

Strengths

- From 2019 to 2024, St. George recorded the fastest high-tech expansion of all small metros in our ranking, with high-tech real GDP growth of 106.3 percent during this period.
- St. George's job growth has been partially driven by the expansion of its education and health services sector, which in 2024 accounted for 17.1 percent of the metro's jobs.

Areas of Focus

- Despite an improvement in single-family house prices, housing affordability remains a challenge for St. George.
- St. George's water availability and wildfire risk pose long-term sustainability concerns.

1 Million Cups St. George, UT

A weekly event where 2 entrepreneurs present their early-stage companies to the St. George community for advice and feedback.

FOLLOW

Engage with the Community

Attend an event

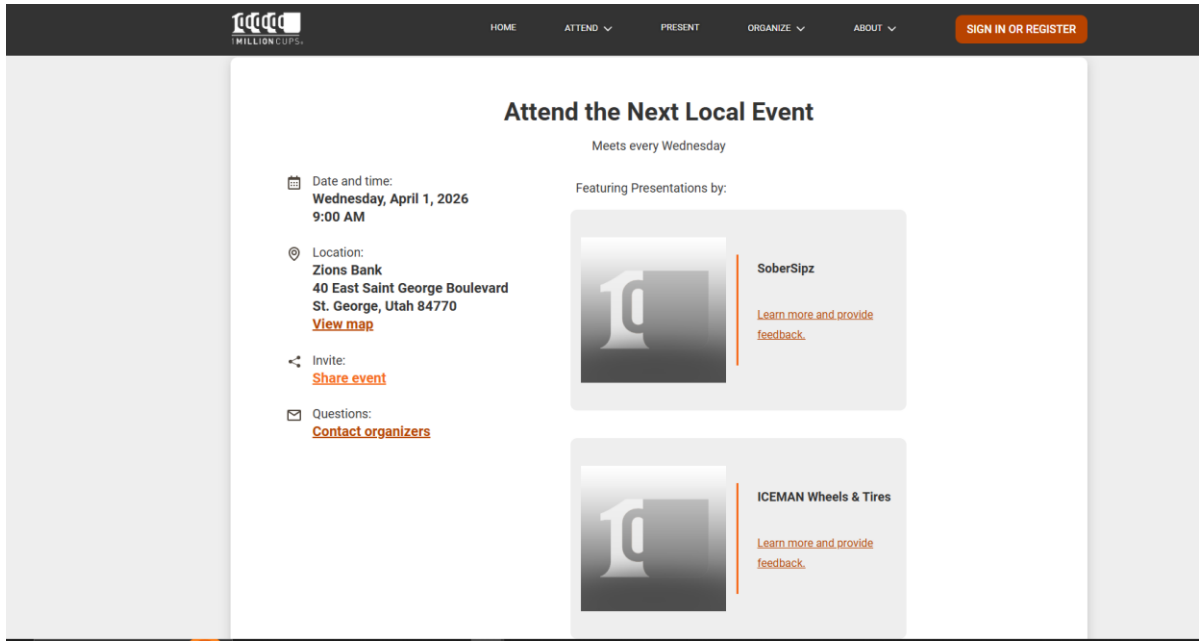
Find out the date, time and location for upcoming 1MC events, and learn how

Present your story

Every Wednesday, 1MC hears from entrepreneurs over a cup of coffee.

Meet the organizers

Local volunteer organizers work together to bring 1MC to life in communities


HOME
ATTEND
PRESENT
ORGANIZE
ABOUT
SIGN IN OR REGISTER
Attend the Next Local Event
Meets every Wednesday
Date and time:
Wednesday, April 1, 2026
9:00 AM
Location:
Zions Bank
40 East Saint George Boulevard
St. George, Utah 84770
View map
Invite:
Share event
Questions:
Contact organizers
Featuring Presentations by:
SoberSipz
Learn more and provide feedback.
ICEMAN Wheels & Tires
Learn more and provide feedback.


VIOLIN GALLERY


BACKGROUND


A NEW-VIEW AUTO GLASS HISTORY
2010
Earned Public Trust
Dealerships
General Public
Insurance Agencies
Bought Building @ 375 N Park Street
Solopreneur
St. George (435) 628-5333
Mesquite (702) 344-5311
435-628-5300


Plan it Like It's Hot


© Michael J. Clark
UTAH ALLIANCE
For Economic Development
GROWING UTAH'S ECONOMY BY SUPPORTING UTAH'S ECONOMIC DEVELOPMENT PROFESSIONALS

Jacob Amundsen

Klatch CEO

Business Development

Ryan Starks

President & Executive Director of the Economic Development Corporation of Utah

Economic Insights

Lance Soffe

Director of Industry Partners at the Governor's Office of Economic Opportunity (GOEO)

Business Development

Danny Stewart

Associate Vice President of Regional Project Area Development for the Utah Inland Port Authority (UIPA)

Business Development

Chad Thomas

Economic Development Director for the City of St. George

Business Development

Isaac Barlow

Managing Partner, Tech Ridge

Business Development

WHAT'S UP DOWN SOUTH

The Salt Lake Tribune

Why this booming southern Utah city now claims the No. 1 spot in national ‘best performing cities’ ranking

Affordable housing and possible water shortages are the area’s two top challenges, the report states.

(Trent Nelson | The Salt Lake Tribune) St. George on Tuesday, Sept. 16, 2025.

By Mark Eddington | Jan. 30, 2026, 6:00 a.m. | Updated: 7:20 a.m.

St. George is this year's best small city, but water and housing could hold it back

KUER 90.1 | By David Condos
Published January 27, 2026 at 5:31 PM MST

David Condos / KUER

A view of downtown St. George, Utah, Feb. 26, 2025. The fast-growing community has been named the nation's top small city in a new economic ranking.

St. George has been named America's best-performing small city in a new national economic ranking.

Southwest Utah's largest city tops the list for the first time in 2026 after spending the past decade battling it out in the top five. The report from the Milken Institute, an international economic think tank, pointed to the city's swift growth in jobs and wages, which were both among the nation's highest in recent years.

"It's something that we've known for a long time here," said St. George Economic Development Director Chad Thomas, "but to hit that top spot feels really good."

As the local economy grows, he said, it presents an enticing opportunity to tourists. They may realize southwest Utah is a place they can live, rather than just a spot for outdoor recreation.

Beyond giving the city something to post on social media, recognitions like this can have tangible impacts for St. George, Thomas said. It helps attract new businesses to town and affirms that some of the moves city leaders have made appear to be working.

"It puts the spotlight back on St. George," Thomas said. "These success stories and these rankings help us think, 'OK, what are we doing well? And let's continue to do that.'"

Milken also showed some love for northern Utah. Behind St. George, Logan came in 8th for best small city. And the Provo and Salt Lake City metro areas ranked as the 6th and 7th best large cities in the U.S., respectively.

Jobs in St. George increased by 24% from 2019 to 2024 and another 4% from 2024 to 2025, according to the report. Both numbers rank in the top five nationwide. Although the city falls in the middle of the pack for its tech economy overall, it did see the country's top growth rate in that industry since 2019.

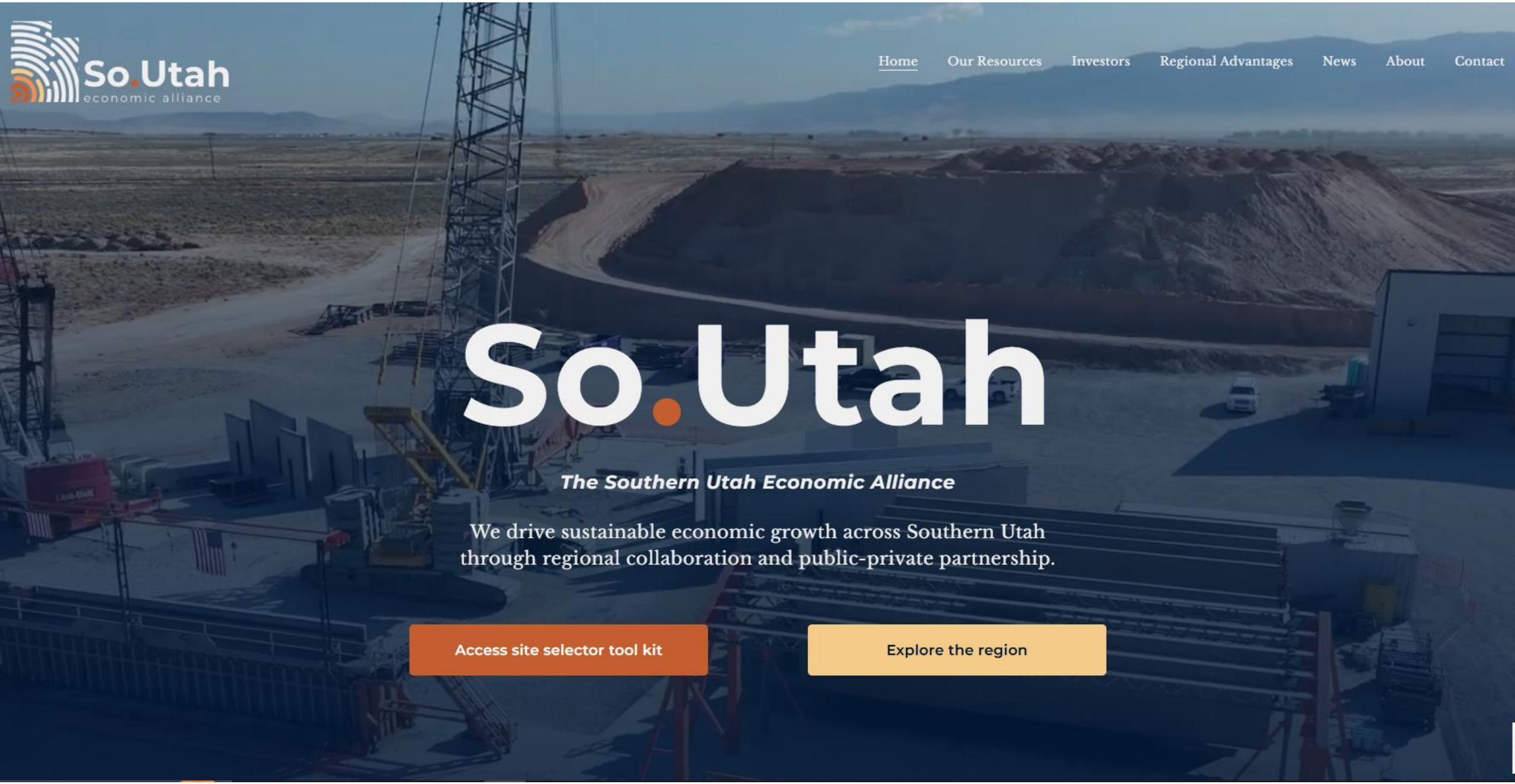
Despite the high ranking, the report also pointed out a few enduring weaknesses that could hold St. George back.

First, there are environmental challenges, like water scarcity and wildfire risk.

Washington County has a long-term plan to stretch its limited water supply into the early 2040s. It hopes to do that by increasing conservation — primarily replacing irrigated lawns with less thirsty landscaping — and by ramping up how much sewage it cleans and reuses.

Both initiatives have seen some early success, but they still face challenges. Wastewater reuse efforts are expensive, with the countywide system's price tag estimated to well surpass a billion dollars. And increased conservation relies on residents voluntarily changing their behavior, which can take time.

While St. George has not experienced a major urban wildfire in recent years, it's vulnerable to the types of disasters that have happened in Los Angeles and Colorado. Essentially all of the city's properties face a major risk for wildfire in the next three decades, according to First Street, a research organization that quantifies climate risks.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The Southern Utah Economic Alliance
We drive sustainable economic growth across Southern Utah
through regional collaboration and public-private partnership.
Access site selector tool kit
Explore the region

5N+ Awarded US$18.1 Million by U.S. Government to Significantly Increase Germanium Production Capacity in St. George, Utah

Français

NEWS PROVIDED BY
5N Plus Inc. →
Jan 30, 2026, 08:00 ET

SHARE THIS ARTICLE

MONTREAL, Jan. 30, 2026 /CNW/ - 5N Plus Inc. (TSX:**VNP**) ("5N+" or "the Company"), a leading global producer of specialty semiconductors and performance materials, today announced that it has been awarded a US$18.1 million grant by the U.S. Government to expand capabilities and increase capacity to recycle and refine germanium at its St. George, Utah facility, to feed optics and solar germanium crystal supply chains.

In support of the U.S. government's Immediate Measures to Increase American Mineral Production Executive Order, the award will enable 5N+ to gradually increase its capabilities to recover germanium from industrial residues and mining by-products over the course of the next 48 months. In time, it should enable 5N+ to valorize up to 20 metric tons of high-purity germanium per year. Combined with its current sourcing capabilities, this will position the Company to meet rapidly growing demand for germanium-based technological applications in the United States.

ECONOMIC DEVELOPMENT

- Coming Soon To St. George
- General Plan
- Demographics
- Development Projects
- Resources

CONTACT INFORMATION

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Economic Development Director

61 S. Main St.
St. George, Ut 84770

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435-627-4730

Email Us

Economic Development

COMING SOON TO THE CITY OF ST. GEORGE

SMALL BUSINESS DATA/RESOURCES

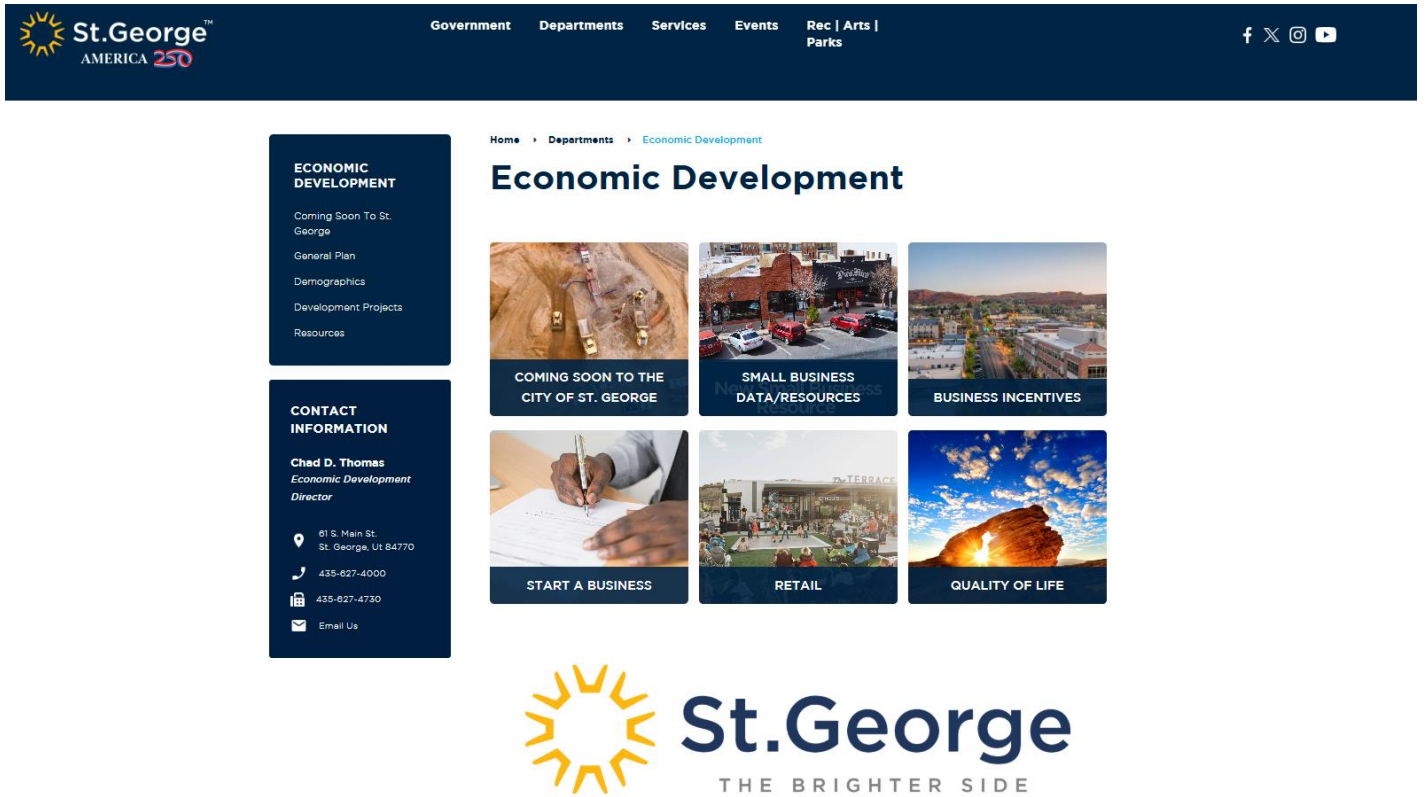
BUSINESS INCENTIVES

START A BUSINESS

RETAIL

QUALITY OF LIFE

St.George
THE BRIGHTER SIDE


St.George
AMERICA 250
Government
Departments
Services
Events
Rec | Arts | Parks
ECONOMIC DEVELOPMENT
Coming Soon To St. George
General Plan
Demographics
Development Projects
Resources
CONTACT INFORMATION
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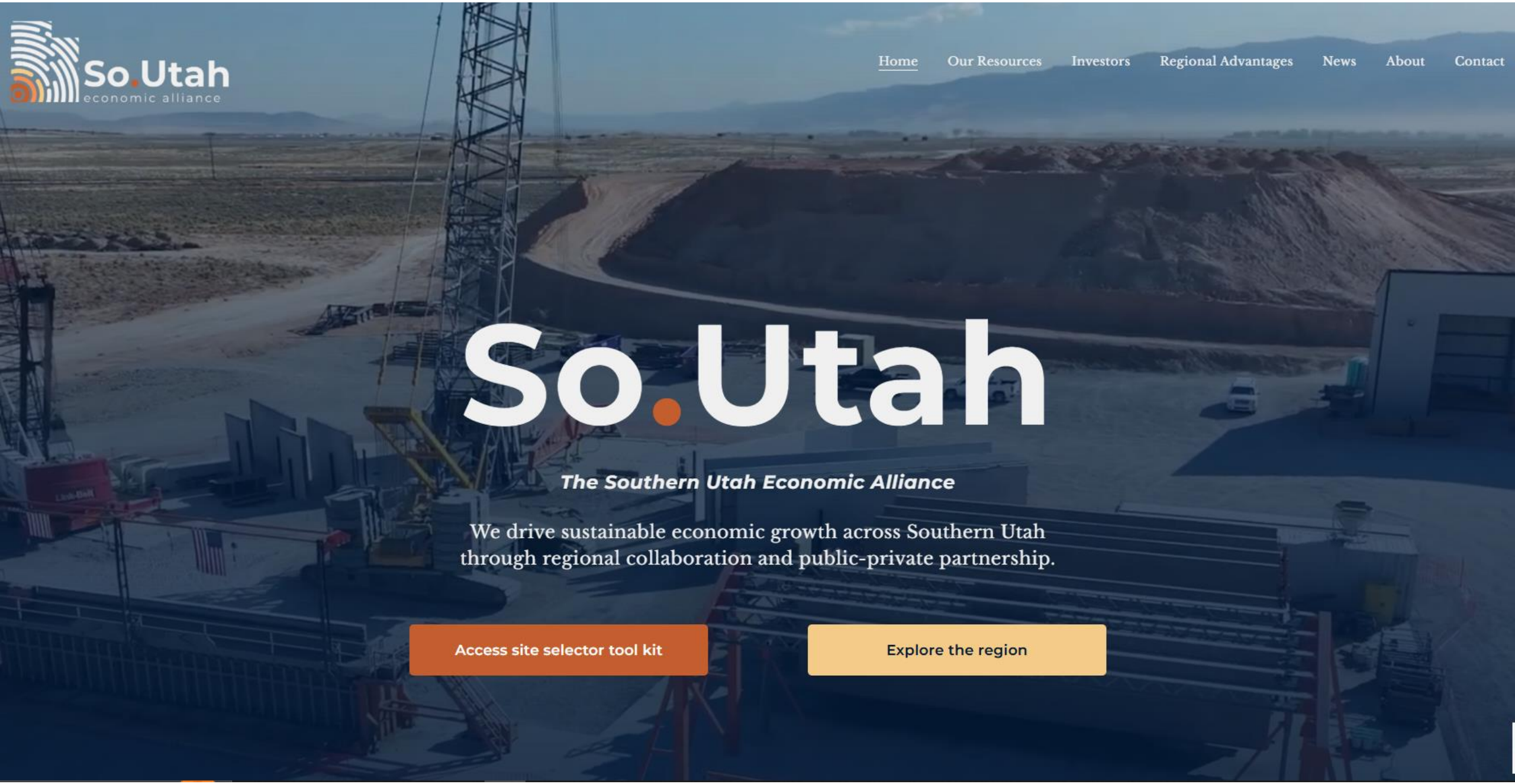
Pica Rica
AMERICANA BARBECUE
New Small Business Resource
St.George
THE BRIGHTER SIDE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We drive sustainable economic growth across Southern Utah
through regional collaboration and public-private partnership.
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Explore the region

Start your market research

Enter your industry and location below to begin exploring market conditions and performance benchmarks.

EN ES Help

Measure your business performance.
Discover potential customers.
Optimize target marketing.

Enter your industry and location to start analysis

Restaurants | St. George, UT | Next

↑ PLEASE ENTER YOUR INDUSTRY AND LOCATION ABOVE...

Start your market research

Enter your industry and location below to begin exploring market conditions and performance benchmarks.

Measure Your Business Performance

Compare your business ranking to industry competitors

Find Customers, Suppliers, and Competitors

Reveal new business opportunities and threats

Optimize Marketing and Advertising

Target your ideal customers

Analyze Demographics

Explore nearby customer and employee characteristics

Compare your business to the competition in the **Restaurants** industry around **St. George, UT**

PDF

Revenue
Annual revenue of your business

$ Enter Your Value

Year Started
The year your business was started

Enter Your Value

Salary
Average annual worker salary

$ Enter Your Value

Employees
Number of full-time equivalent employees

Enter Your Value

Cost Effectiveness
Revenue per employee divided by worker salary

Enter Values Above

Revenue Per Capita
Revenue generated per community resident

$6,020

66th

Revenue

Annual revenue of your business

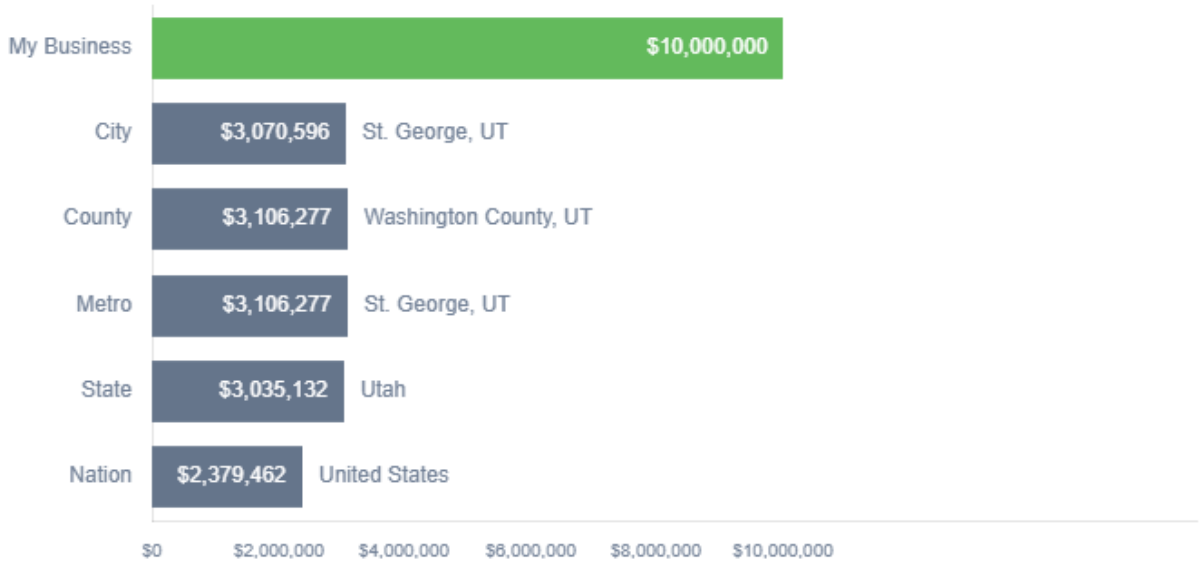
$ 10,000,000

100th

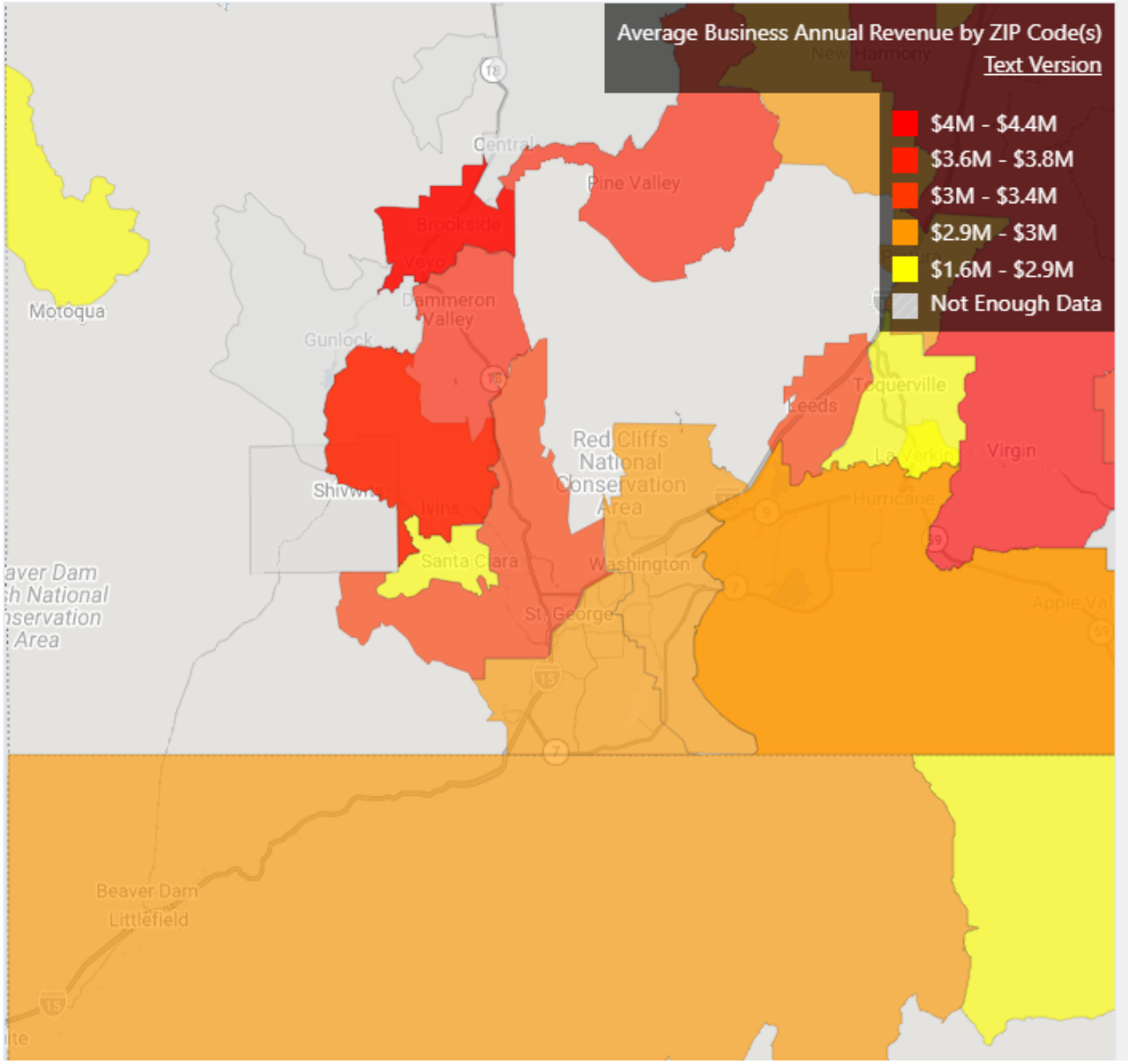
How you sizeup

The revenue your business generates is greater than 99% of businesses in your industry in your city, greater than 99% of businesses in your county, greater than 99% of businesses in your metro, greater than 99% of businesses in your state and greater than 99% of businesses in the nation.

Chart | Table



Average revenue data for communities on SizeUp is aggregated from data on individual businesses, which comes from hundreds of data sources including, but not limited to, IRS records, county courthouse filings, business publications, and corporate annual reports.



Salary
Average annual worker salary

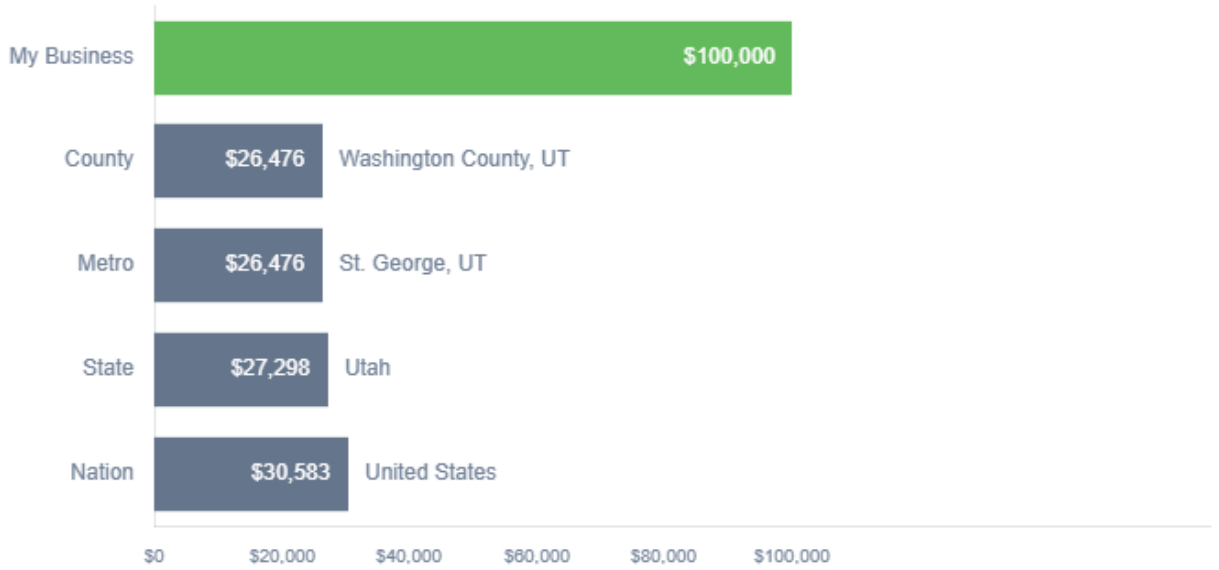
$ 100,000

226%

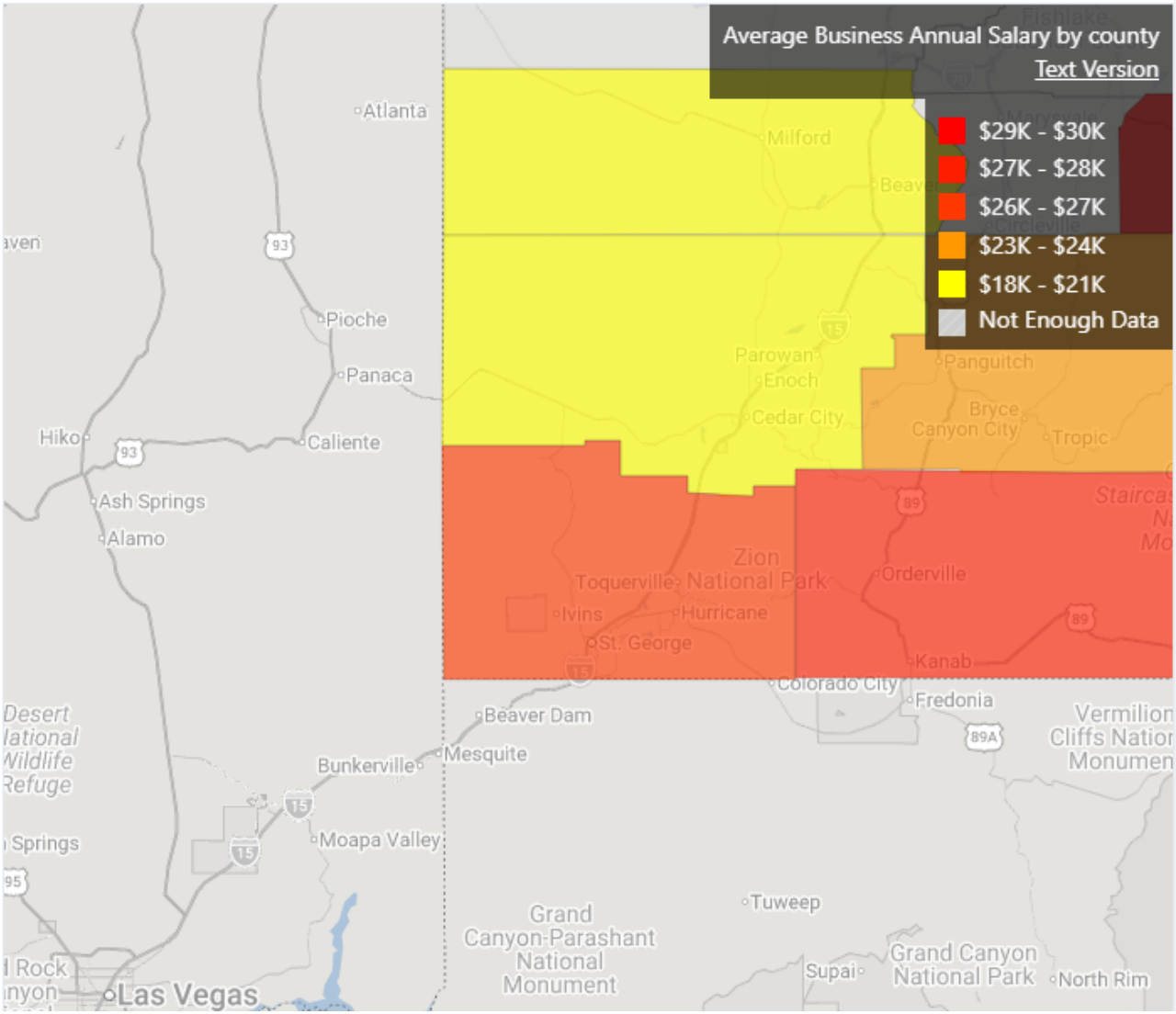
How you sizeup

Average salary data reflects **Full-Service Restaurants**, the closest corresponding category. The average salary for your business is 277% above average for your county, 277% above average for your metro, 266% above average for your state and 226% above average for the nation.

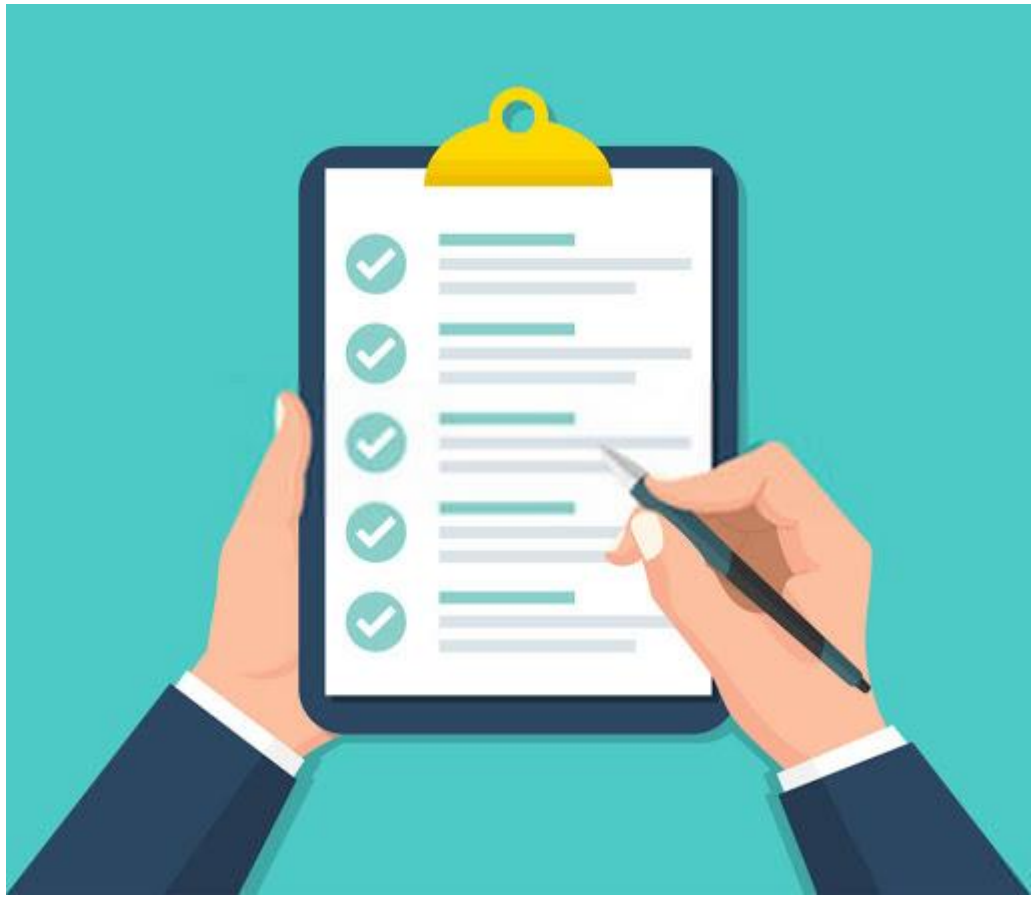
Chart | Table



Salary data comes from quarterly censuses of businesses by the Federal Government.



Business Survey

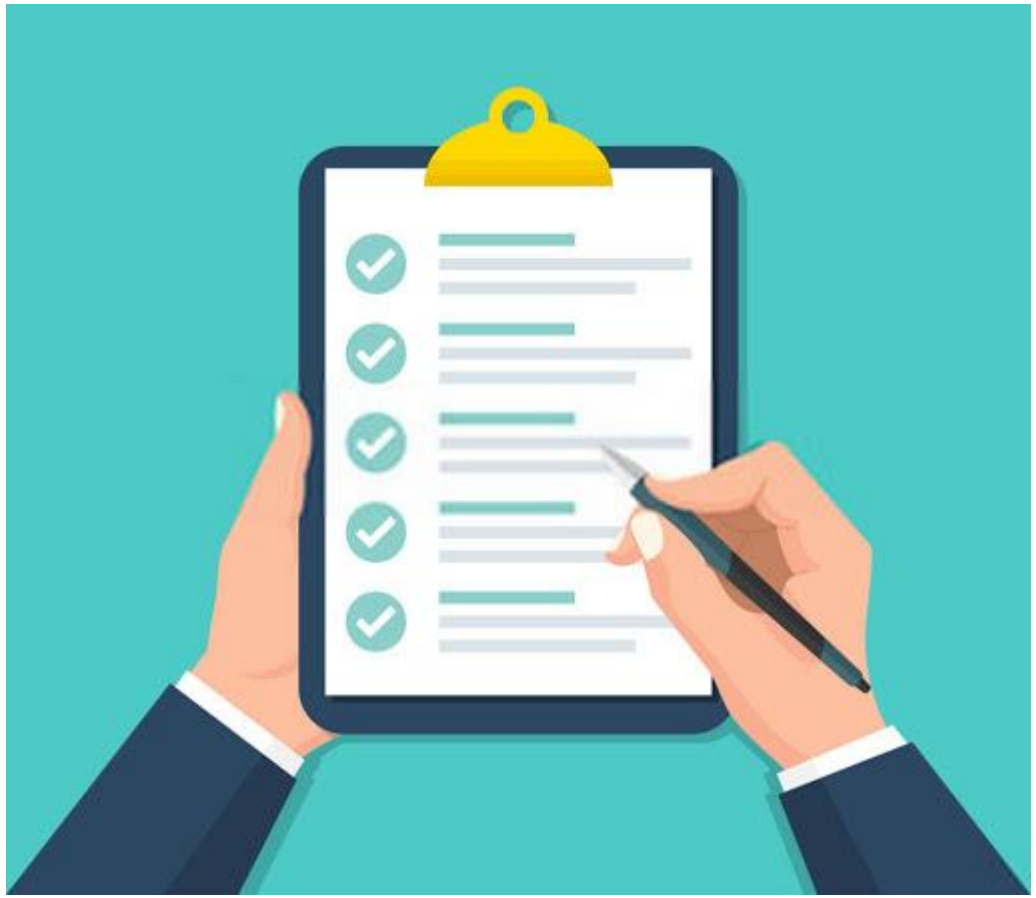


Priority Topics

Which of the following areas are most important to include?

- Workforce / labor availability
- Business climate / regulatory environment
- Infrastructure (roads, utilities, broadband)
- Economic confidence / outlook
- Barriers to growth
- City services & responsiveness
- Sentiment on City Events
- Other?

Business Survey



Priority Topics

- Partners
- Timeline
- Qualtrics
- Process

OWNER OCCUPIED SHORT-TERM RENTALS

WORK MEETING DISCUSSION

BENEFITS AND DRAWBACKS

BENEFITS OF SHORT-TERM RENTALS

- FLEXIBILITY FOR OWNER
- ECONOMIC BENEFITS FOR OWNER
- CREATES AFFORDABLE HOUSING FOR OWNER
- CITY BENEFIT OF INNKEEPER TAX
- INCREASE PROPERTY VALUES
- ONSITE MANAGEMENT

DRAWBACKS OF SHORT-TERM RENTALS

- NEIGHBORHOOD CHARACTER IMPACTS
- PARKING AND TRAFFIC
- ENFORCEMENT CHALLENGES
- SAFETY AND LIABILITY ISSUES
- DECREASES AFFORDABLE HOUSING SUPPLY
- HOUSING SUPPLY IMPACTS INCLUDING INCREASED PROPERTY VALUES

STUDIES ON HOUSING PRICES AND RENT INCREASES

New York City Study

- For every **1% of housing units converted to Airbnb**, neighborhood rents increased **1.58%**.
- STRs accounted for about **9.2% of the citywide rent increase** during the study period.

Washington, D.C. Study

- Each additional Airbnb listing within **200 feet of a home increased the sale price by 0.78%**.
- In some neighborhoods, STR activity contributed to **more than a 5% increase in home prices**.

NEARBY EXAMPLES

- Hurricane
- La Verkin

OPTIONS

OPTIONS

- KEEP REGULATIONS HOW THEY ARE
- ALLOW FOR STR IN A SINGLE-FAMILY HOMES
  - RENT OUT ONE ROOM
  - RENT MULTIPLE ROOMS
  - RENT OUT BASEMENT OR SECOND STORY
  - RENT OUT ADU
- ALLOW FOR STR IN SINGLE-FAMILY HOMES IN CERTAIN AREAS OF TOWN
- ALLOW STR IN LANDMARK HOMES (REMOVED IN 2022)

OPTIONS

- OBTAIN BUSINESS LICENSE
- SAFETY INSPECTIONS

ELECTRONIC MESSAGE SIGNS

ADJACENT TO RESIDENTIAL

REVIEW

OCTOBER 2025 AMENDMENT TO SIGN CODE

Proposal to Remove

9-13-4B-1e

Animated Signs: Animated signs shall be permitted in commercial zones only. However, no animated sign shall be allowed on property adjacent to a residential zone. Further, animation shall not include sign rotation or movement. Animation shall be limited to electronic message centers or electronic display screens. Flashing or blinking signs are prohibited.

Proposal to Replace

Electronic message signs shall be at least three hundred feet (300’) away from a residential zone (measured from the face of sign). If an EMS is within three hundred feet (300’) of a residential zone it must be separated by topography, geological feature, or structure which will permanently visually obstruct the sign from the residential zone **OR** that the electronic message sign view area is not located within the residential zone.

SUMMARY OF COUNCIL'S CONCERNS

Concerns

- Concerns about the impact to residents nearby and our community –we are not Vegas
- Concerned about light pollution
- Concerns about Blvd Home and Summitt signs
- Concerns about the heights of EMS being taller than building
- Concerns about the direction a sign faces
- Want more information on the significance of 300’ with examples

EXAMPLES

Code Requirements

- Not to exceed 0.3 footcandles over ambient light
- Measurement taken using square root of sign face times 100

SIGN AREA VERSUS MEASUREMENT DISTANCE

AREA OF SIGN sq. ft.	MEASUREMENT (ft.)
10	32
15	39
20	45
25	50
30	55
35	59
40	63
45	67
50	71
55	74
60	77
65	81
70	84
75	87
80	89
85	92
90	95
95	97
100	100
110	105
120	110
130	114
140	118
150	122
160	126
170	130
180	134
190	138
200	141
220	148
240	155
260	161
280	167
300	173

Dixie Sunset Plaza Measuring Distance 92’

Sign at Dixie Sunset Plaza 85 sf

Ambient Light Reading: 0.30fc

Ambient Light Reading: 0.60fc

Dixie Sunset Plaza Measuring Distance 200’

Ambient Light Reading: 0.0fc

Sign Brightness Reading: 0.11fc

Dixie Sunset Plaza Measuring Distance 400’

Ambient Light Reading: 0.46fc

Sign Brightness Reading: 0.46fc

St George Place Measuring Distance 165’

Sign at St. George Place 270 sf

Ambient Light Reading: 1.2fc

Sign Brightness Reading: 1.4fc

St. George Place Measuring Distance 300’

Ambient Light Reading: 0.87fc

Sign Brightness Reading: 0.87fc

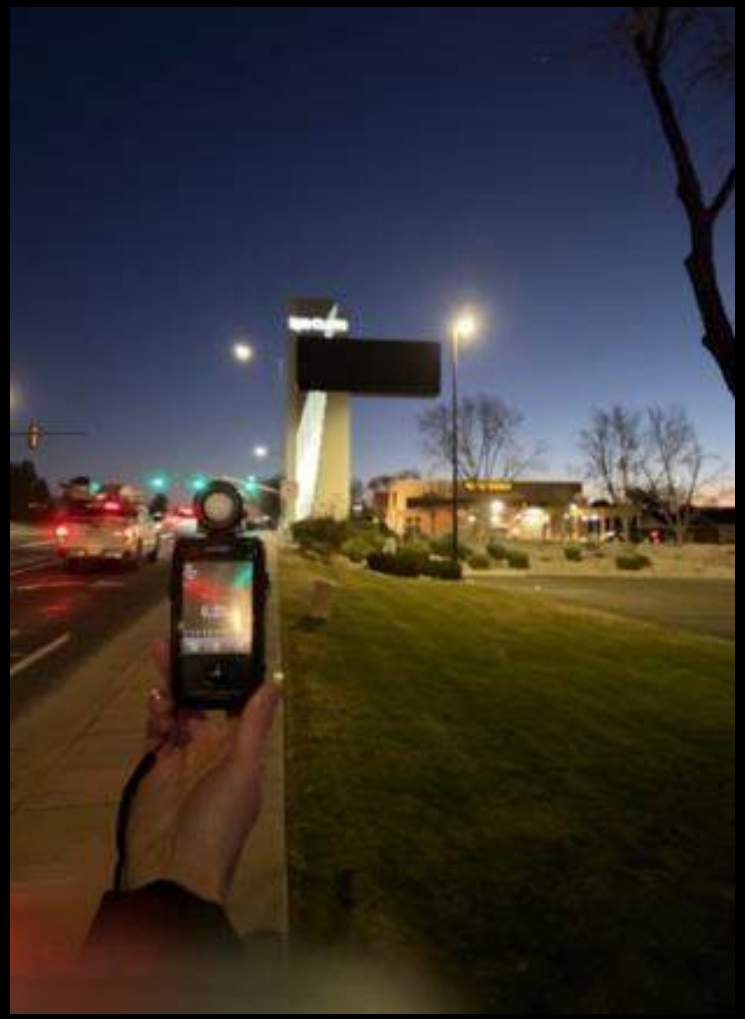
St. George Place Measuring Distance 400’

Ambient Light Reading: 1.7fc

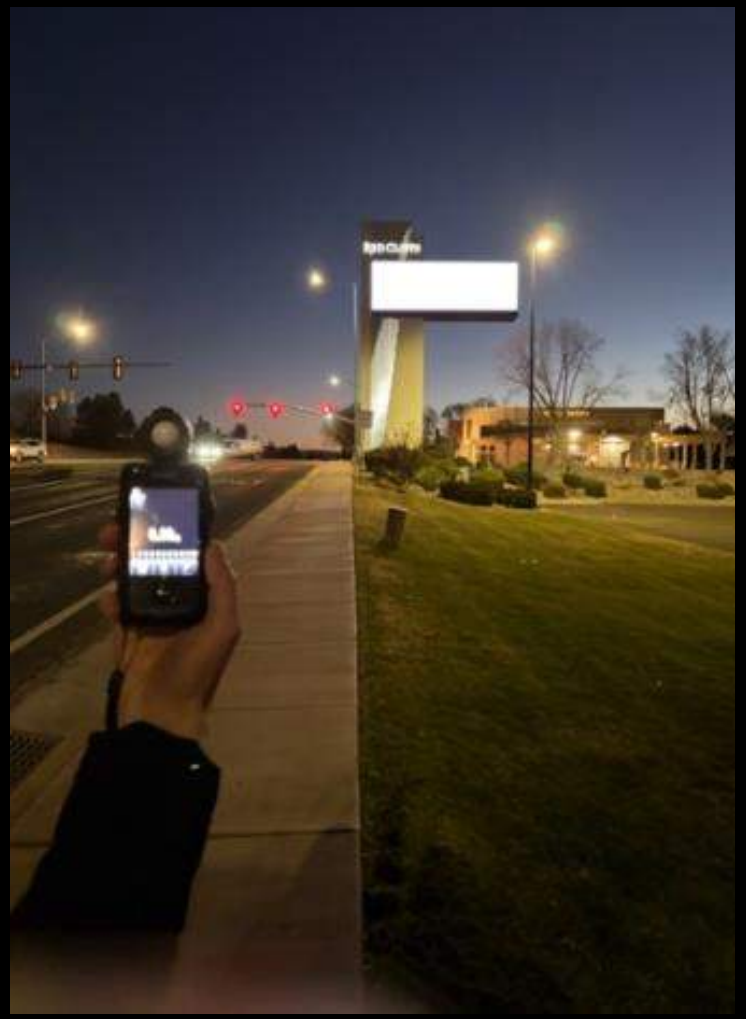
Sign Brightness Reading: 1.7fc

Red Cliffs Mall Measuring Distance 173’

Sign at Red Cliffs Mall 295 sf

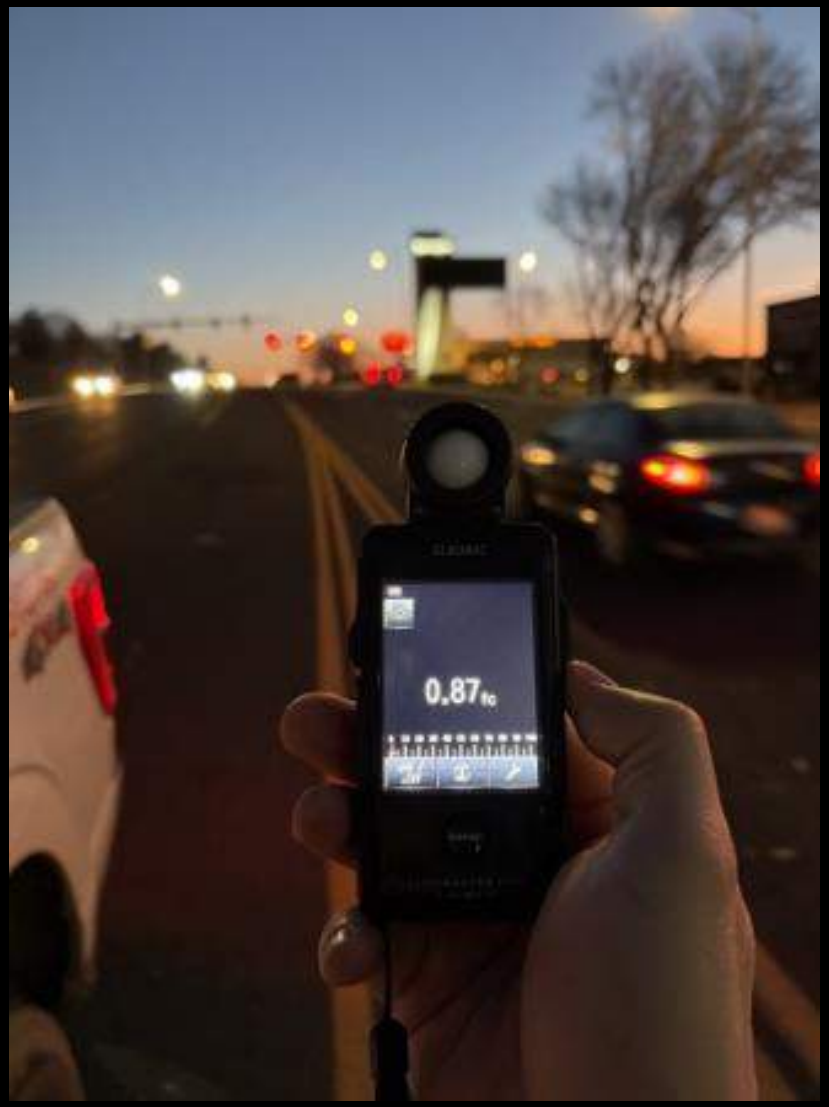


Ambient Light Reading: 0.33fc

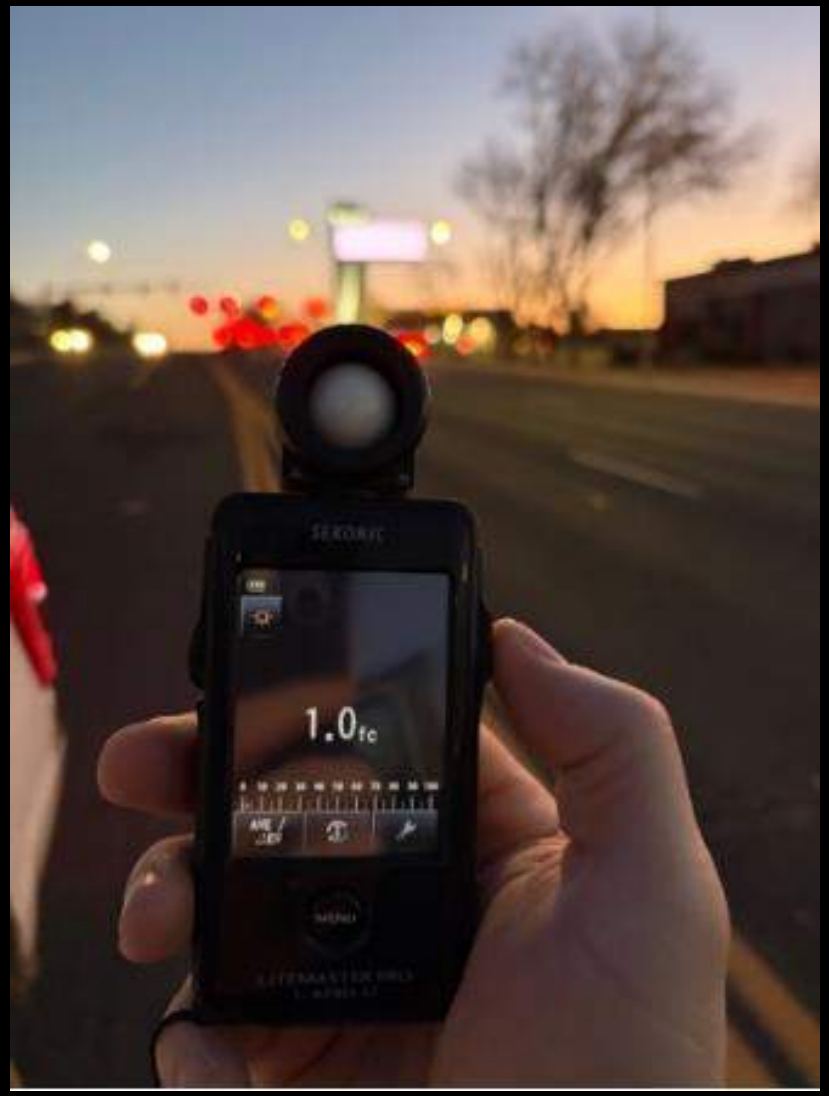


Sign Brightness Reading: 0.60fc

Red Cliffs Mall Measuring Distance 400’



Ambient Light Reading: 0.87fc



Sign Brightness Reading: 1.0fc

Red Cliffs Mall Measuring Distance 500’

Ambient Light Reading: 1.5fc

Sign Brightness Reading: 1.5fc

Main Street Performing Arts Bldg. Measuring Distance 77’

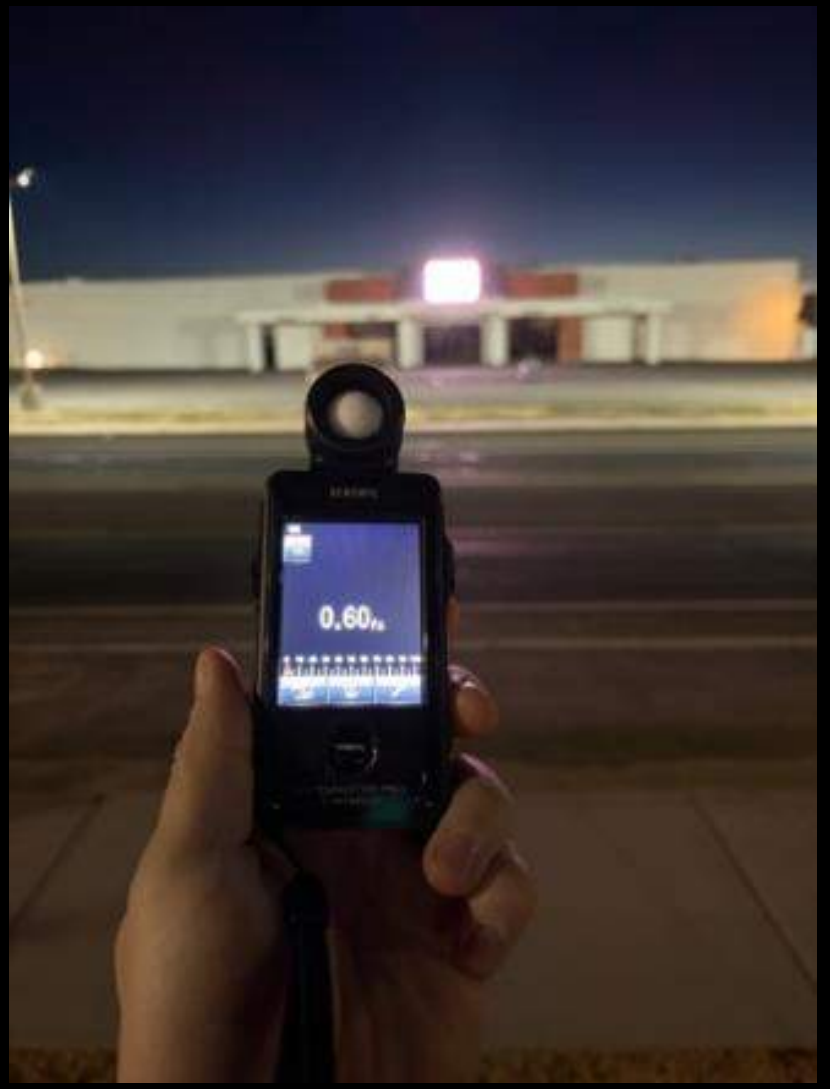
Sign at Main St. Performing Arts Bldg. 60 sf

Ambient Light Reading: 0.15fc

Sign Brightness Reading: 1.2fc

Main Street Performing Arts Bldg. Measuring Distance 200’

Ambient Light Reading: 0.13fc



Sign Brightness Reading: 0.60fc

Main Street Performing Arts Bldg. Measuring Distance 400’

Ambient Light Reading: 0.19fc

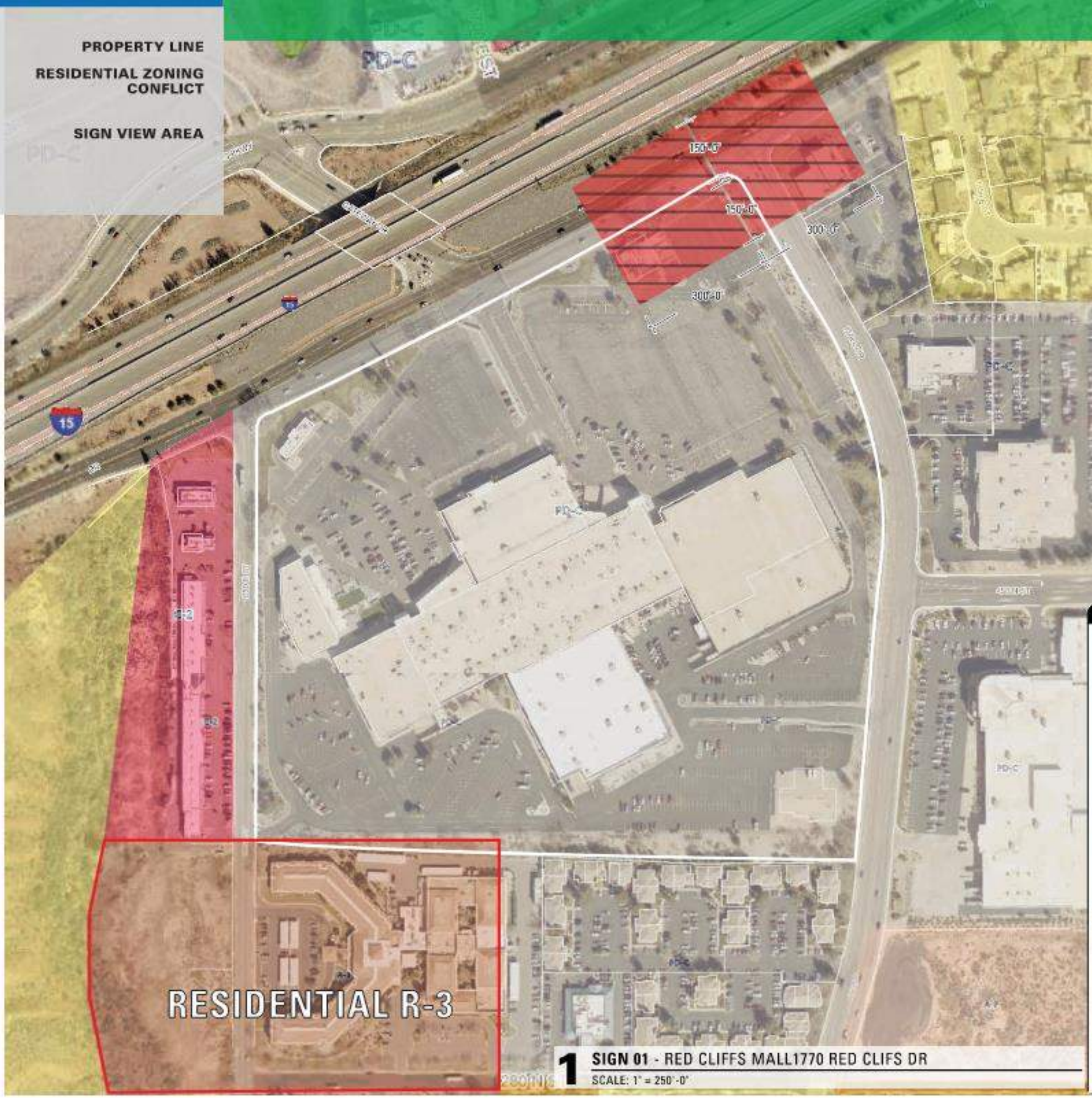
Sign Brightness Reading: 0.40fc

LEGEND

PROPERTY LINE

RESIDENTIAL ZONING CONFLICT

SIGN VIEW AREA



1 SIGN 01 - RED CLIFFS MALL1770 RED CLIFS DR

SCALE: 1" = 250'-0"

SIGN REFERENCE

YESCO

DESIGN

4679 South River Road
St. George, UT 84790
435.628.0350
www.yesco.com

The colors shown are only approximated on any computer monitor, inkjet or laser print. The final product may vary slightly in color from your computer monitor or print.

Revisions

No.	Date / Description
Org.	05.13.2025 [TY]
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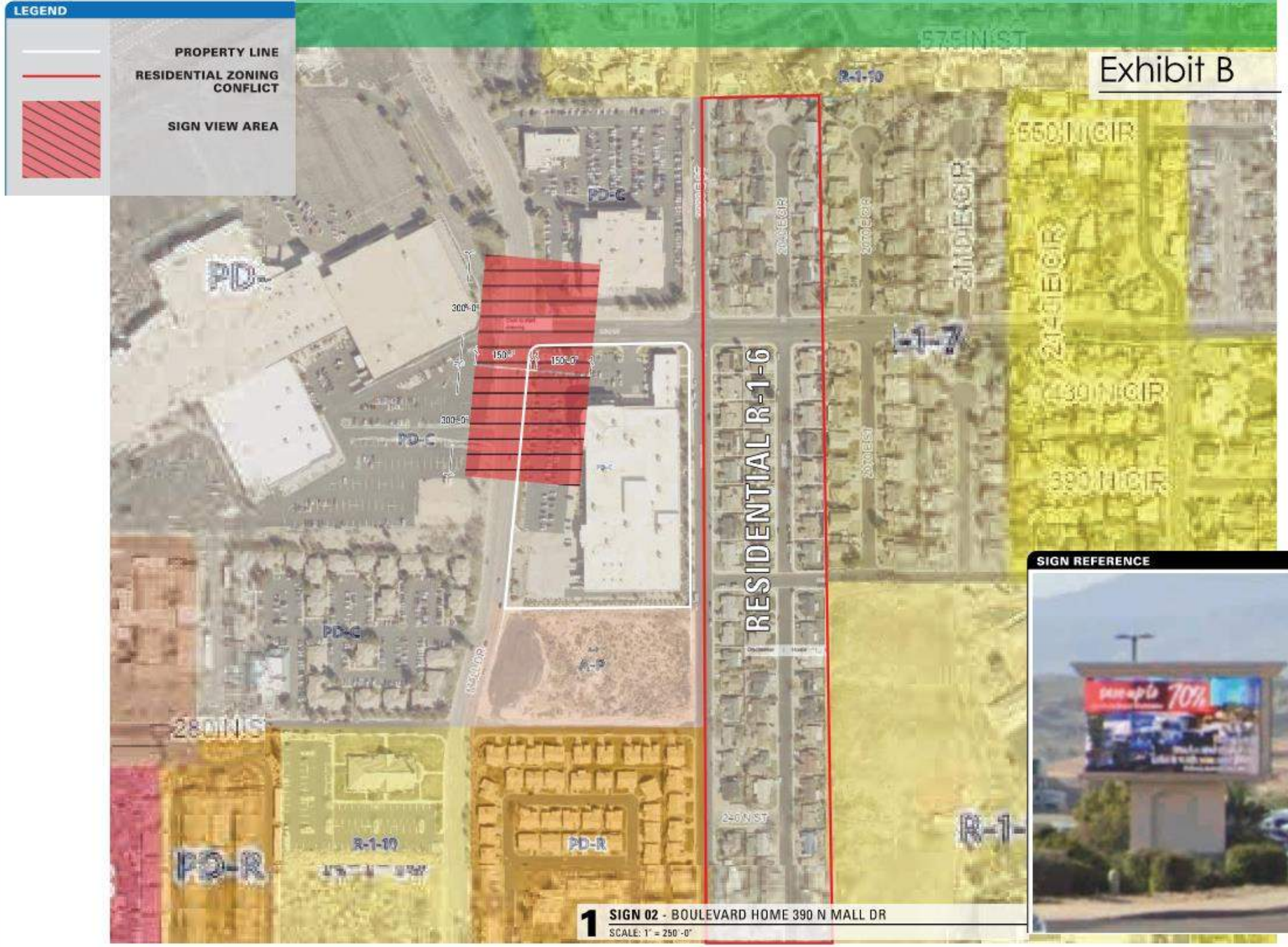
R0

ART 2.0

Exhibit B



SIGN REFERENCE

1 **SIGN 02** - BOULEVARD HOME 390 N MALL DR
SCALE: 1" = 250'-0"

YESCO

DESIGN

4679 South River Road
St. George, UT 84790
435.628.0350
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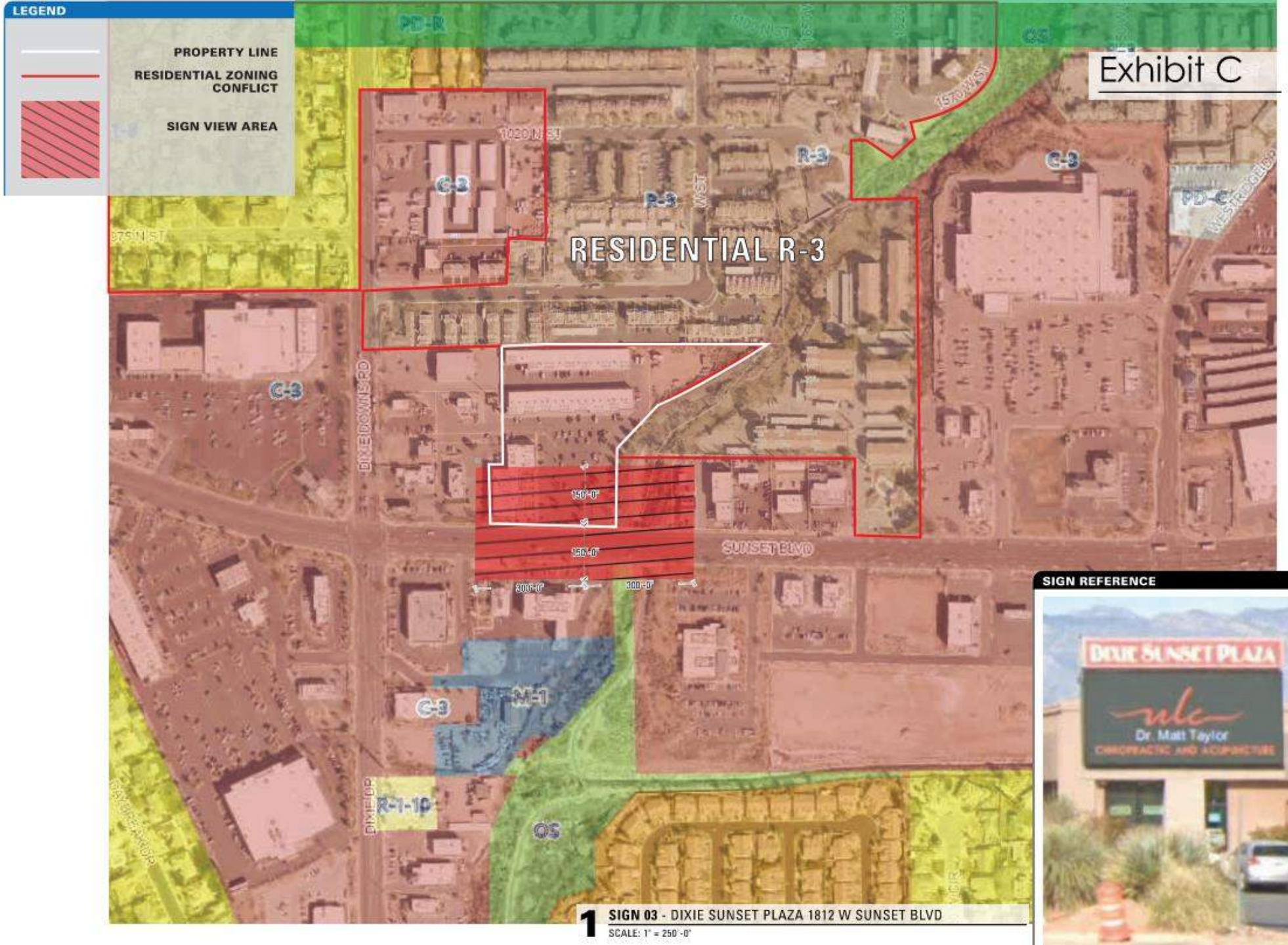
Revisions

No.	Date / Description
Org.	05.13.2025 [TY]
1	---

RO

ART 3.0



1 **SIGN 03** - DIXIE SUNSET PLAZA 1812 W SUNSET BLVD
SCALE: 1" = 250'-0"

SIGN REFERENCE

YESCO

DESIGN

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435.628.0350
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Revisions

No.	Date / Description
Org.	05.13.2025 [TY]
1	---

RO

ART 4.0

Exhibit D

LEGEND

- PROPERTY LINE
- RESIDENTIAL ZONING CONFLICT
- SIGN VIEW AREA

RESIDENTIAL R-3

SIGN REFERENCE

1 SIGN 04 - SERVPRO 1136 E 200 S
SCALE: 1" = 250'-0"

YESCO

DESIGN

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St. George, UT 84790
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www.yesco.com

Revisions

No.	Date / Description
Orig.	05.13.2025 [TY]
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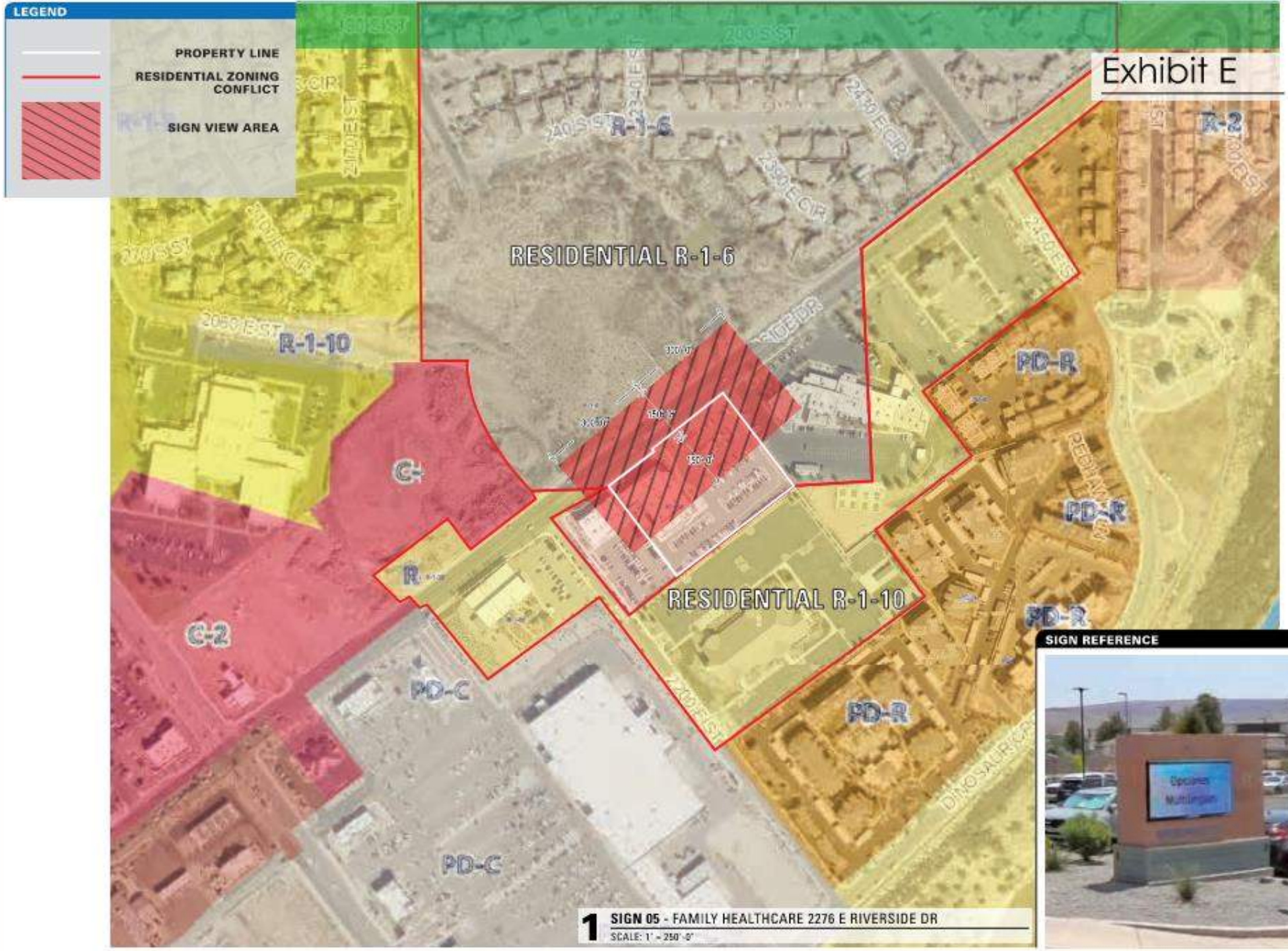
R0

ART 5.0



SIGN REFERENCE

YESCO

DESIGN

4679 South River Road
St. George, UT 84790
435.628.0350
www.yesco.com

Revisions

No.	Date / Description
Org.	05.13.2025 [TY]
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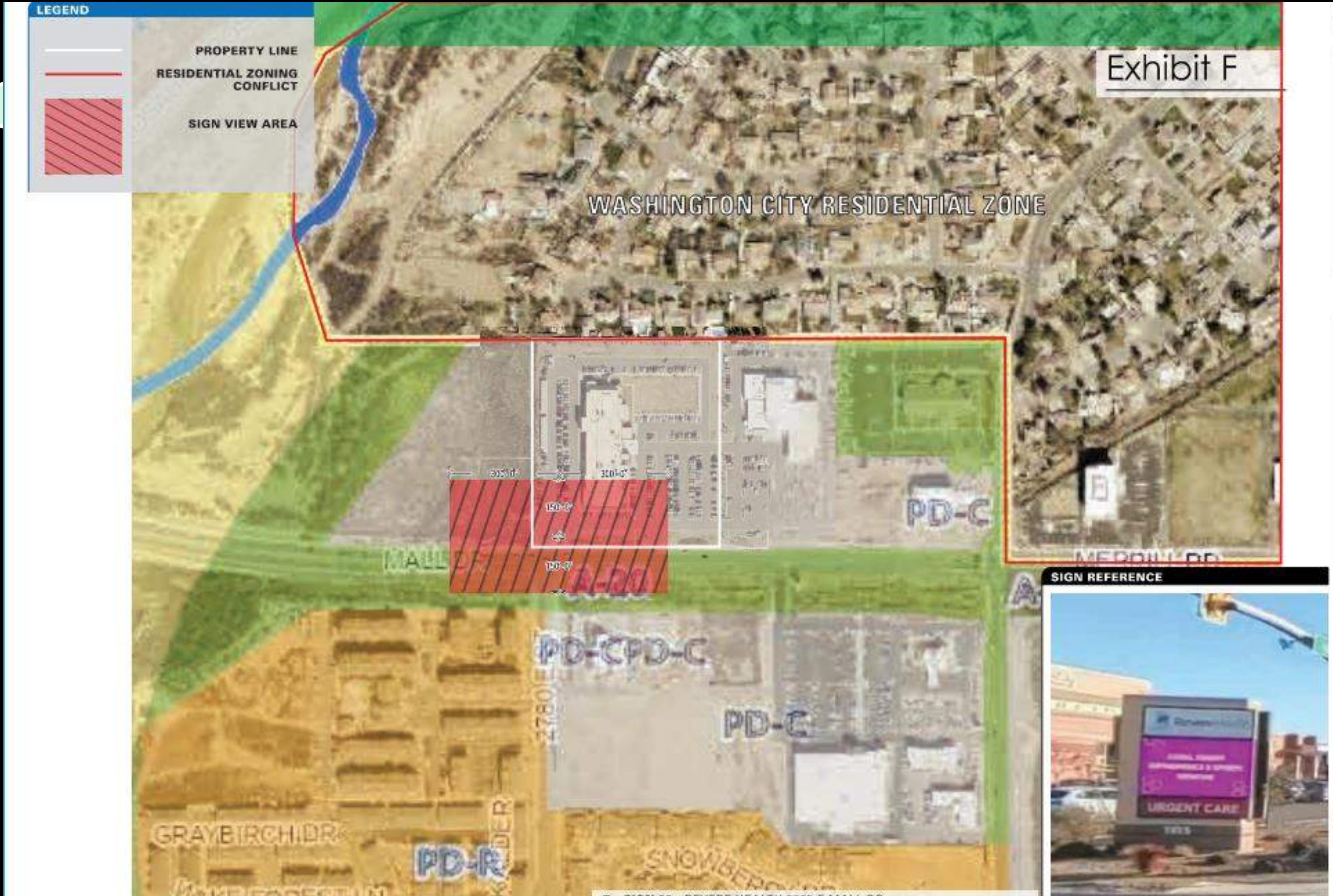
RO

ART 6.0



1 **SIGN 06** - REVERE HEALTH 2825 E MALL DR

SCALE: 1" = 250'-0"

YESCO

DESIGN

4679 South River Road
St. George, UT 84790
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Revisions

No.	Date / Description
Org.	05.13.2025 [TY]
1	---

R0

ART 7.0

YESCO

DESIGN

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Revisions

No.	Date / Description
Org.	05.13.2025 [TY]
⚠	---

R0

ART 8.0

Conceptual Sign in development Process

Proposed Sign Not Allowed per Current Code Regulations

Yet Would Match the Sign View Area Requirments.

LEGEND

PROPERTY LINE

RESIDENTIAL ZONING CONFLICT

SIGN VIEW AREA

SIGN REFERENCE

1 SIGN 01 - PINEVIEW PLAZA 2376 RED CLIFFS DR

SCALE: 1" = 250'-0"

YESCO

DESIGN

4679 South River Road
St. George, UT 84790
435.628.0350
www.yesco.com

Revisions

No.	Date / Description
Orig.	05.13.2025 (TY)
⚠	---

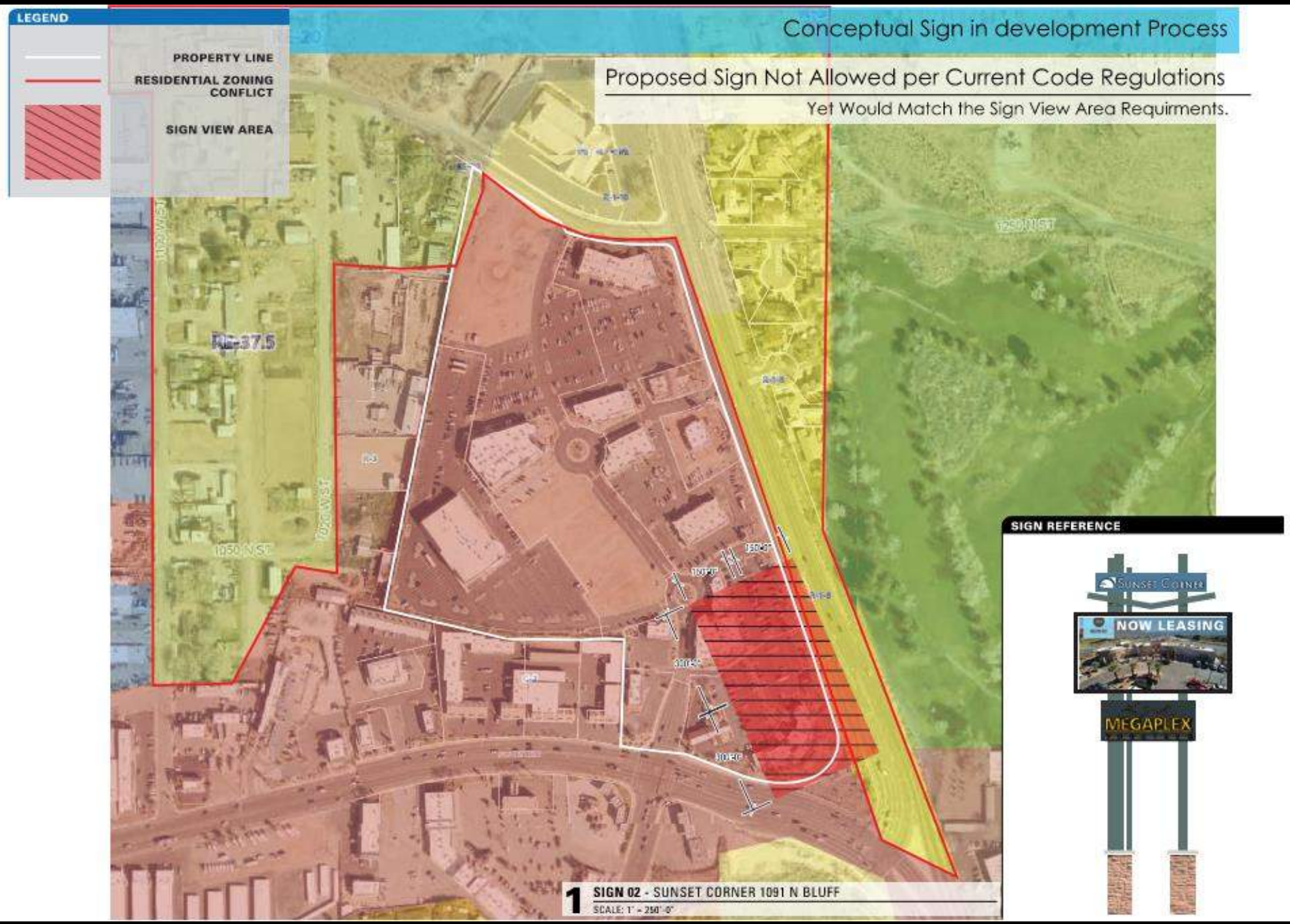
RO

ART 9.0

Conceptual Sign in development Process

Proposed Sign Not Allowed per Current Code Regulations

Yet Would Match the Sign View Area Requirments.



1 **SIGN 02** - SUNSET CORNER 1091 N BLUFF

SCALE: 1" = 250'-0"

SIGN REFERENCE

YESCO

DESIGN

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St. George, UT 84790
435.628.0350
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Revisions

No.	Date / Description
Orig.	05.13.2025 [TY]
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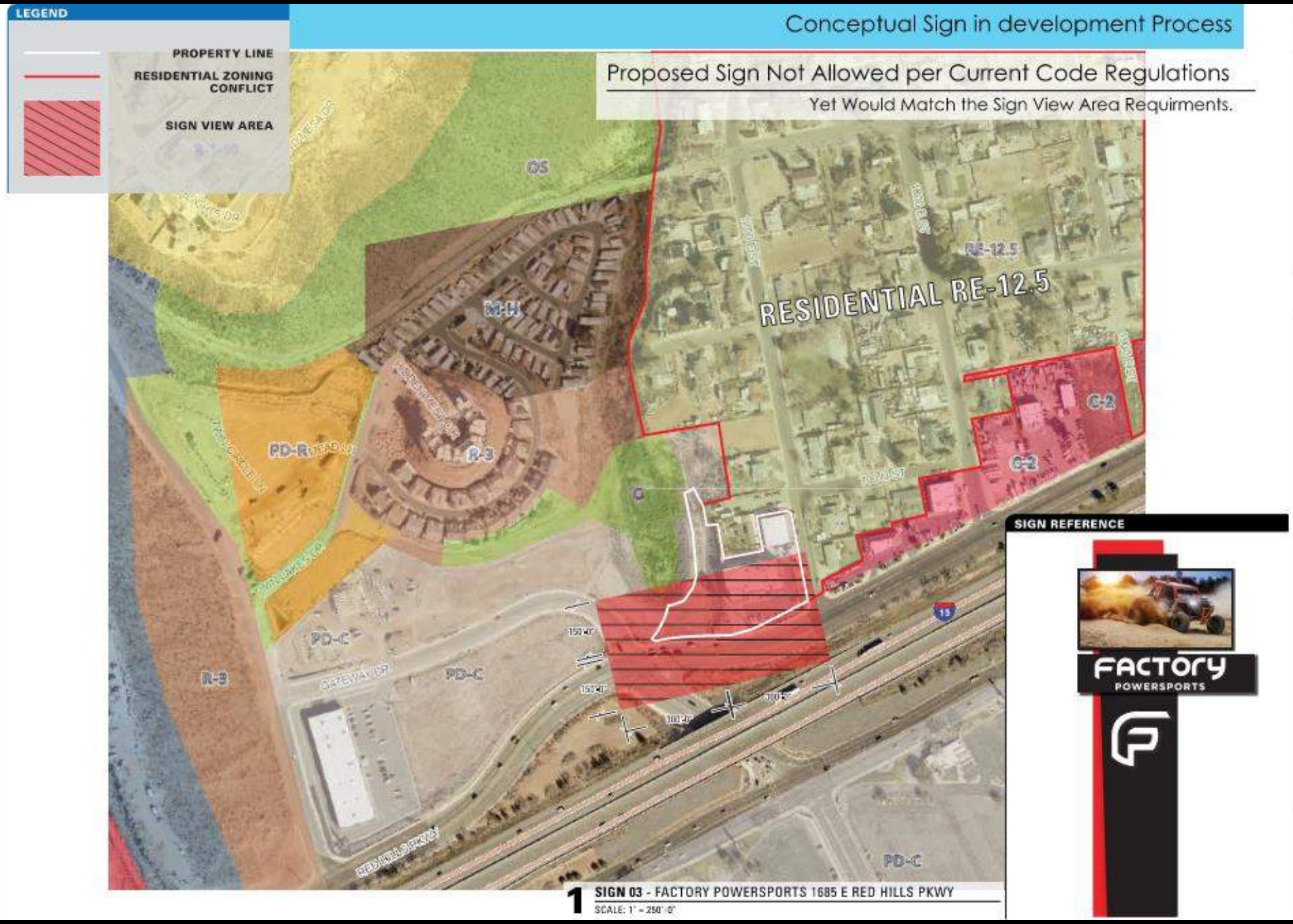
RO

ART 10.0

Conceptual Sign in development Process

Proposed Sign Not Allowed per Current Code Regulations

Yet Would Match the Sign View Area Requirments.



SIGN REFERENCE

FACTORY POWERSPORTS

1 **SIGN 03** - FACTORY POWERSPORTS 1685 E RED HILLS PKWY

SCALE: 1" = 250'-0"

YESCO

DESIGN

4679 South River Road
St. George, UT 84790
435.628.0350
www.yesco.com

Revisions

No.	Date / Description
Org.	05.13.2025 [TY]
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R0

ART 11.0

Electronic Message Centers (EMC) Light Study

The International Sign Association (ISA) retained a light expert, Dr. Ian Lewin, to help the industry develop scientifically-researched, understandable recommendations for EMC brightness. This recommendation states that EMC's **not exceed 0.3 footcandles** over ambient lighting conditions when measured at the recommended distance, based on EMC size.

Excessive brightness can make digital signs hard to read and off-putting to the public. That's why it's in everyone's best interest—from the businesses using them to the officials regulating them—to get the lighting just right. Proper dimming ensures the sign remains effective, professional, and community-friendly after dark.

Achieving this balance requires a two-fold approach: setting clear standards for measured illuminance and ensuring that EMCs are equipped with automatic dimming technology. By utilizing signs that can self-regulate based on ambient light levels, we can ensure consistent legibility while remaining compliant with local standards.

How to measure the night-time brightness of an EMC:

1) **Obtain an Illuminance Meter-** The illuminance meter must have the ability to provide a reading up to two decimal places and must be set to read footcandles. These meters can be purchased online.

2) **Determine Square Footage-** Determine the square footage of the face of the electronic message sign (EMC) by multiplying the height and width of the EMC.

3) **Determine the Measurement Distance-** Using the total square footage of the EMC found in step 2, use the table provided by ISA in the PDF provided with this light study to determine the distance to measure the brightness of the EMC. The distance should be measured perpendicular to the EMC sign face.

4) **Prepare The Display for Testing-** Ensure the EMC's programmed to alternate between a solid white message and a blank message. If we do not have control of the sign, there is an alternative way to measure found in the ISA PDF.

5) **Use An Illuminance Meter to Measure the Brightness of the EMC-** Mount the illuminance meter to a tripod or orient the sensor directly towards the face of the EMC at the correct measurement distance. As the display alternates between the white message board and "off", note the range of values. If the difference is between 0.3 footcandles, then the brightness of the display is in compliance.

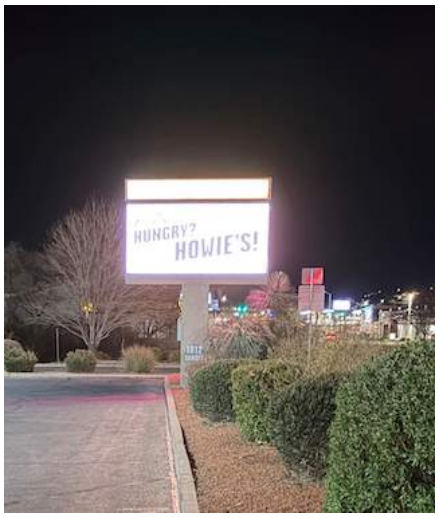
Source: Internation Sign Association, *Night-Time Brightness Level Recommendations for On-Premise Electronic Message Centers* (August 2016)

St. George Light Study Examples

Sign A:

Sign Size= 85 sq. ft

Measuring Distance: 92 feet



Pic of Sign

Ambient Light Reading: 0.30fc

Sign Brightness Reading: 0.60fc

Calculation (Footcandles): 0.60fc (sign brightness)-0.30fc (ambient light)= 0.3fc

Sign Complies with the 0.3 Footcandles Standard

Additional Distance Measurements For Sign A:

Measuring Distance=200 Feet

Ambient Light Reading: 0.00fc Sign Brightness Reading: 0.11fc

Measurement Distance= 400 Feet

Ambient Light Reading: 0.46fc Sign Brightness Reading: 0.46fc

Sign B:

Sign Size= 270 sq. ft

Measuring Distance: 165 feet

Pic of Sign

Ambient Light Reading: 1.2fc

Sign Brightness Reading: 1.4fc

Calculation (Footcandles): 1.4fc (sign brightness)-1.2fc (ambient light)=0.2fc

Sign Complies with the 0.3 Footcandles Standard

Additional Distance Measurements For Sign B:

Measuring Distance=300 Feet

Ambient Light Reading: 0.87fc Sign Brightness Reading: 0.87fc

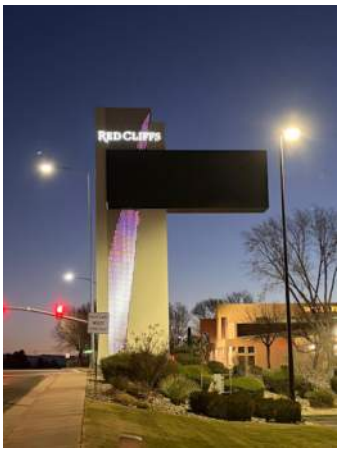
Measurement Distance= 400 Feet

Ambient Light Reading: 1.7fc Sign Brightness Reading: 1.7fc

Sign C:

Sign Size= 295 sq. ft

Measuring Distance: 173 feet



Pic of Sign

Ambient Light Reading: 0.33fc

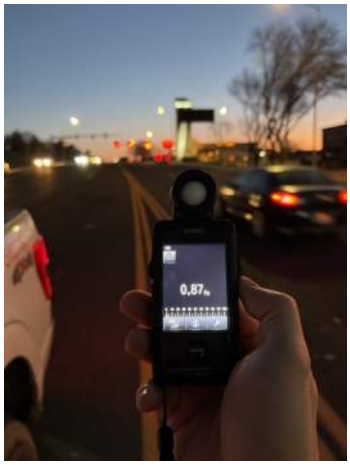
Sign Brightness Reading: 0.60fc

Calculation (Footcandles): 0.60fc (sign brightness)-0.33fc (ambient light)=0.27fc

Sign Complies with the 0.3 Footcandles Standard

Additional Distance Measurements For Sign C:

Measuring Distance=400 Feet



Ambient Light Reading: 0.87fc Sign Brightness Reading: 1.0fc

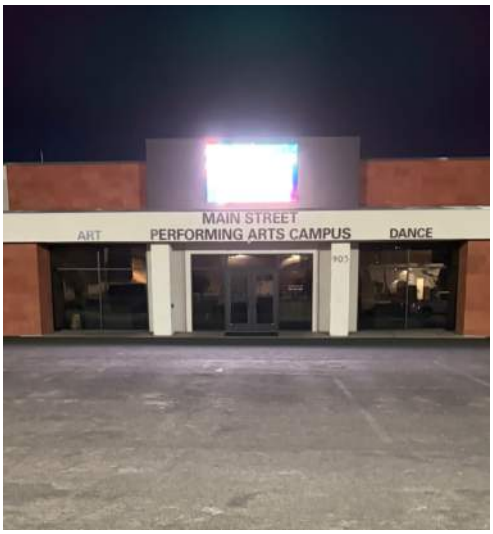
Measurement Distance= 500 Feet

Ambient Light Reading: 1.5fc Sign Brightness Reading: 1.5fc

Sign D:

Sign Size= 60 sq. ft

Measuring Distance: 77 feet



Pic of Sign

Ambient Light Reading: 0.15fc

Sign Brightness Reading: 1.2fc

Calculation (Footcandles): 1.2fc (sign brightness)-0.15fc (ambient light)= 1.05fc

Sign DOES NOT COMPLY with the 0.3 Footcandles Standard (too bright)

Additional Distance Measurements For Sign D:

Measuring Distance=200 Feet

Ambient Light Reading: 0.13fc Sign Brightness Reading: 0.60fc

Measurement Distance= 400 Feet

Ambient Light Reading: 0.19fc Sign Brightness Reading: 0.40fc

RESEARCH

Night-time Brightness Level Recommendations for On-Premise Electronic Message Centers

Updated August 2016

PRODUCED BY:

International Sign Association

TABLE OF CONTENTS

LEARN MORE ABOUT EMCS

The International Sign Association offers an Electronic Message Center (EMC) Resource Center, with resources on:

- EMCs and traffic safety
- A framework for developing EMC sign code language
- The differences between EMCs and digital billboards

www.signs.org/local

ADDITIONAL SIGN CODE RESOURCES

The International Sign Association has developed numerous tools to help communities develop better sign codes. All are housed at www.signs.org/local, including:

- The Supreme Court ruling, *Reed v. Town of Gilbert*
- Model sign codes
- Best practices in regulating temporary and wayfinding signs
- The Economic Impact of On-Premise Signs

ISA's advocacy team is available to provide complimentary assistance on sign codes and sign-related issues.

Contact SignHelp@signs.org or 703.836.4012.

INTRODUCTION

ELECTRONIC MESSAGE CENTERS (EMCs)

Electronic message centers, or EMCs, continue to grow in popularity for business and community use. You may have heard EMCs being referred to as changeable message displays or digital signs.

EMCs are *not* digital billboards, which advertise a good or service that is located away from the sign. Rather, EMCs are digital signs that are located *on the premises,* and that advertise goods and services that are available at the location.

Electronic Message Center (EMC)/on-premise sign advertising a bank that is located on the same premises as the sign

Digital billboard/off-premise sign advertising an automobile business in another location

There is often confusion regarding on- and off-premise digital signs. However, EMCs and digital billboards have very distinct capabilities and purposes, each targets a specific audience and each has traditionally been treated under separate legal and regulatory regimes, a zoning practice which was noted in the 2015 U.S. Supreme Court ruling in *Reed v. the Town of Gilbert*. For the purposes of this publication, *we are focusing solely and exclusively on EMCs*.

EMCs that are too bright at night can be offensive and ineffective. Night-time EMC brightness is an issue where sign users, the sign industry, and local offices have a common goal: ensuring that EMCs are appropriately legible. We know the messages that these signs convey can be rendered unattractive and perhaps even unreadable if they are programmed too bright.

That's why many sign companies recommend to their customers that in order for these signs to be most effective, their brightness be set at such a level to be visible, readable and conspicuous.

The International Sign Association (ISA) retained noted lighting expert Dr. Ian Lewin of Lighting Sciences to help the industry develop scientifically-researched, understandable recommendations for EMC brightness. Dr. Lewin was a past chair of the Illuminating Engineering Society of North America (IES), and was greatly respected within the lighting field. His work for ISA was conducted with the input of experts within the sign industry.

As a result of his research, Dr. Lewin recommended two different brightness settings based on whether the EMC was located in an area of high or low ambient light. After field testing and utilizing Dr. Lewin's recommendations, it was determined that using the more conservative recommendation is appropriate in areas of both low and high ambient light. In order to simplify Dr. Lewin's recommendations, and to take a more reasonable approach to ensure that EMCs are sufficiently visible but not overly bright, ***it is recommended that EMCs not exceed 0.3 footcandles over ambient lighting conditions when measured at the recommended distance, based on the EMC size.***

The research and the recommendations contained in this report pertain only to EMCs, not traditionally internally illuminated signs, such as these channel letter and neon signs below. EMCs use a different lighting technology than most of these types of signs, and as such the scientific approach differs.

Community leaders should understand that, while it is recommended that brightness measurements be taken perpendicular to the sign, sign viewers rarely see the sign at that same perpendicular approach. At any viewing point away from or off the forward angle, the apparent brightness will be reduced. In other words, the measurements will capture the recommended brightness levels, but, unless viewers are looking at the sign directly perpendicular, they will not perceive the brightness at the full level.

We have provided recommended statutory language and tips to measure brightness with and without control of the EMC. If you need further assistance, feel free to contact ISA, signhelp@signs.org or at (703) 836-4012 to answer any of your EMC questions.

FOOTCANDLES VS. NITS: WHICH MEASUREMENT IS BETTER?

This document recommends communities adopt illumination measurements in footcandles as compared to nits. Here are a few reasons why more than 200 localities and many state departments of transportation have adopted the footcandle measurement for EMCs:

FOOTCANDLES

Measures illuminance
Accounts for ambient light conditions
Luxmeter measuring device $100
"Twilight" measurement possible
Measures light impact and appearance
Works with roadway lighting standards
Easier to check and enforce

NITS

Measures luminance
Measures only the amount of brightness emitted
Luminance spectrometer (nit gun) - $1,000
Does not allow adjustment based on ambient light
Does not measure appearance
Difficult to measure accurately
Difficult to enforce

* While the main advantage of using nits as compared to footcandles is that daytime measurement is possible, EMC brightness is typically more of an issue at night.

CASE STUDY: Columbus, Ohio

COMMUNITY . . . . . **Columbus, Ohio**
POPULATION. **836,000**
LOCATION . . . . . As Ohio's largest city and state capitol, Columbus is the country's 15th largest city.
SPECIFIC EMC ISSUE. . . . . Crafting a reasonable, enforceable code that addresses complaints while preserving the ability for businesses to use what it termed automatic changeable copy signs.

As automatic changing copy signs—as Columbus refers to EMCs—grew in use, so did community complaints.

By 2011, city planners began to edit the graphics codes to limit special effects. The goal was to continue to allow for a variety of commercial graphics, "but not at the expense of neighborhoods," said Lisa Russell, the city's Planner II who facilitated the code development project.

The city had in place certain limits on automatic changing copy signs, aka EMCs, in the graphics code, limiting their use to commercial and manufacturing zoning districts and requiring that only half of the sign could be used for the changeable copy. But signs lacked brightness limits and a hold time.

Russell led a team to draft the new code, which incorporated a brightness limit for both on-premise and off-premise signs. The testing method also is included in the code.

It was the result of much scientific discussion. "I believe that the best answer is revealed if you have enough information," Russell said. The committee included a community group leader who was an architect specializing in lighting and representatives from the sign and graphics industry.

"When we started exploring brightness, it appeared the footcandle method was the way to go," Russell said. "However, some group members wanted us to explore the luminance method. ISA believed so strongly that the luminance method was problematic that they brought a demonstration to us."

The demonstration included a field trip to visit a sign to show the impact of the two measurement methods. "They wanted to make sure that we didn't go down the wrong path. They rented a lift and showed us that with the luminance method you'd have to get up in the lift, raise it and shine the nit gun at the sign. With the footcandle meter, you can stand on the ground."

Russell helped the group to see that the "members of the professional sign and graphics industry are not the same as end-users of signs, such as an owner of a carryout who wants to draw attention to his shop over others. We all had an interest in developing reasonable regulations instead of just banning these signs. We also did not want to take away the rights that businesses had to display electronic signs."

The new code has significantly lessened complaints about sign brightness. And when a complaint is received, the code enforcement officers have a verifiable process for determining whether the sign complies with the code.

CASE STUDY: Kitsap County, Washington

COMMUNITY . . . . . **Kitsap County, Washington**
POPULATION. **260,000**
LOCATION . . . . . Across the Puget Sound from Seattle and bordered by rural communities on the west. It is the third most densely populated county in the state.
SPECIFIC EMC ISSUE. . . . . Existing codes did not cover electronic signs.

As a "transition" county between rural Washington and the metropolitan city of Seattle, Kitsap County had the challenges of creating regulations for electronic signs that fit the county's dual personalities.

"The first step was to identify where these signs would be allowed," said Darren Gurnee, a planner with the county. "We wanted to make sure these were restricted to areas of increased density and primarily non-residential use such as industrial zones and commercial zones within the urban growth area."

Previously, the county had allowed electronic signs "as a matter of interpretation," Gurnee said. Crafting more defined electronic sign regulations would provide a measure of stability—and help business owners know what was allowed and where. An added bonus: Gurnee felt the signs would be more attractive than the block letters signs that had to be changed manually.

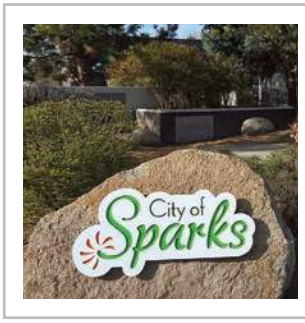
While the county wanted to make it easier for businesses to convert existing static monument signs into electronic signs, it also wanted to ensure that the regulations were not written in a way that would allow billboards to convert.

"We were able to craft our regulations in a way that required signs be brought into conformance before any change could be made," Gurnee said. "Billboards were non-conforming, so that would not be an issue."

ISA provided Gurnee with industry standards—contained in this publication—and some background on the technology that today's electronic signs offer, such as automatic dimming. It also incorporated some of the recommended language on animation, hold times and transitions.

"The regulation is written in a way that it would be easy to enforce," Gurnee said, and easy to understand, without the ambiguities contained in the previous method. The ending code created a perfect fit for both of the community's personalities.

CASE STUDY: SPARKS, NEVADA



COMMUNITY . . . . . **Sparks, Nevada**
POPULATION. **93,500**
LOCATION . . . . . A rapidly growing community, Sparks is located near Lake Tahoe, California, and Reno, Nevada, and is Nevada's fifth largest city.
SPECIFIC EMC ISSUE. . . . . Existing regulations were difficult to enforce and outdated.

Sparks, Nevada had existing regulations of electronic message centers—or electronic variable signs as the community deemed them. But "it wasn't very explicit," said senior planner Karen Melby. "The brightness standards were in lumens, which we didn't even know how to measure."

The regulations were outdated as well—having been drafted in 2002. Technology had changed dramatically and the costs of EMCs had dropped, putting them in the range of more businesses' budgets. "We felt we could see more coming and felt that we needed to get a handle on it."

As a first step, planners required that those seeking an EMC permit meet their standards before approval was granted, but nothing was written into the code. That method can create problems.

So Melby led the city through the code revision process. She sought out industry expertise from both the planning community and the sign and graphics industry. For industry insight, she turned to ISA. ISA provided feedback on how other communities were regulating electronic message centers, and recommendations on what was working for these communities.

One outside group felt strongly that the standards should be regulated in nits, not footcandles. They brought in an expert who opposed the proposed regulations. But Melby held strong on the issue of footcandles. "In my research, it seems like footcandle is what you can see with your eyes while a nit is pinpointing a spot on a sign. When you look at a sign, you're looking at the whole thing, not just one small spot."

The city adopted the widely recognized standard of 0.3 footcandles above ambient light, using the distance measurements outlined in this publication. Melby took that table, determined the formula and wrote the formula into the code.

The community allows smaller signs—those under 32 square feet—to include scrolling, while those larger do not.

The result has been a city that has successfully navigated the balance between business interests and community aesthetics. "We've had very few complaints," Melby said. "When we do get a complaint about a sign being too bright, we go out and measure it. When they bring it down to standards, we don't get complaints."

Being able to use a simple light meter to measure brightness is far easier than simply guessing whether the sign is in compliance, Melby said. "The other method (measuring nits) was really based on opinion. What may seem bright to me may not seem bright to you. Now, we can say, 'This is what the meter says.'"

By having clear standards that are easier to enforce, both community and business win.

EXECUTIVE SUMMARY

ISA ELECTRONIC MESSAGE CENTER NIGHT-TIME BRIGHTNESS RECOMMENDATIONS

This summary has been developed with an understanding that EMCs that are unreasonably bright are not effective for the communities or end users. This intends to help communities and stakeholders develop brightness standards for on-premise EMCs. The summary comprises:

1) An overview of the importance of ensuring appropriate brightness,
2) Technology utilized to ensure appropriate brightness, and
3) Recommended brightness standards

1. Overview of the importance of ensuring appropriate night-time brightness.

EMCs that are too bright at night can be offensive and ineffective. There are significant advantages to ensuring than an electronic display is not overly bright. These advantages include:

- Conservation of energy
- Increased life expectancy of the electronic display components
- Building goodwill with the community
- Ensuring the legibility of the display

It is in the best interest of all stakeholders to ensure that EMCs are sufficiently bright to ensure clear legibility, while at the same time avoiding a display that is overly bright.

2. Technology utilized to ensure appropriate brightness.

Most EMCs are designed to produce sufficient brightness to ensure clear legibility during daylight hours. However, daytime brightness settings are usually inappropriate for night-time viewing. The following general methods are used to dim an EMC for appropriate night-time viewing:

1. ***Manual Dimming.*** Using this method, the sign operator dims the display in response to changing ambient light conditions.
2. ***Scheduled Dimming.*** Sunset-sunrise tables allow an EMC to be programmed to dim at the same time that the sun sets and rises. This method is generally acceptable, but is more effective when used as a backup to automatic dimming controls capability, such as photocell technology.
3. ***Photocell Technology.*** An EMC that utilizes photocell technology can automatically dim as light conditions change. A photocell sensor alerts the display to adjust brightness according to ambient light conditions.

3. Recommended night-time brightness standards.

Dr. Lewin recommended the development of brightness criteria based on the Illuminating Engineering Society's (IES) well-established standards pertaining to light trespass, IES Publication TM-11-00. The theory of light trespass is based on the concept of determining the amount of light that can spill over (or "trespass") into an adjacent area without being offensive.

In order to simplify Dr. Lewin's recommendations, and to take a more reasonable approach to ensure that EMCs are sufficiently visible but not overly bright, **it is recommended that EMCs not exceed 0.3 footcandles over ambient lighting conditions when measured at the recommended distance, based on the EMC size.**

Email signhelp@signs.org to receive Dr. Lewin's original research.

...it is recommended that EMCs not exceed 0.3 footcandles over ambient lighting conditions when measured at the recommended distance, based on the EMC size.

RECOMMENDED LEGISLATIVE LANGUAGE

Electronic Message Center (EMC) Criteria: The night-time illumination of an EMC shall conform with the criteria set forth in this section.

A. EMC Illumination Measurement Criteria: The illuminance of an EMC shall be measured with an illuminance meter set to measure footcandles accurate to at least two decimals. Illuminance shall be measured with the EMC off, and again with the EMC displaying a white image for a full color-capable EMC, or a solid message for a single-color EMC. All measurements shall be taken as close as practical to a perpendicular plane of the sign at the distance determined by the total square footage of the EMC as set forth in the accompanying Sign Area of a Sign versus Measurement Distance table.

B. EMC Illumination Limits: The difference between the off and solid-message measurements using the EMC Measurement Criteria shall not exceed 0.3 footcandles at night.

C. Dimming Capabilities: All permitted EMCs shall be equipped with a sensor or other device that automatically determines the ambient illumination and programmed to automatically dim according to ambient light conditions, or that can be adjusted to comply with the 0.3 footcandle measurements.

D. Definition of EMC: A sign that utilizes computer-generated messages or some other electronic means of changing copy. These signs include displays using incandescent lamps, LEDs, LCDs or a flipper matrix.

SIGN AREA VERSUS MEASUREMENT DISTANCE

AREA OF SIGN sq. ft.	MEASUREMENT (ft.)
10	32
15	39
20	45
25	50
30	55
35	59
40	63
45	67
50	71
55	74
60	77
65	81
70	84
75	87
80	89
85	92
90	95
95	97
100	100
110	105
120	110
130	114
140	118
150	122
160	126
170	130
180	134
190	138
200	141
220	148
240	155
260	161
280	167
300	173

** For signs with an area in square feet other than those specifically listed in the table (i.e., 12 sq ft, 400 sq ft, etc), the measurement distance may be calculated with the following formula: Measurement Distance = $\sqrt{\text{Area of Sign Sq. Ft. x } 100}$*

HOW TO MEASURE THE NIGHT-TIME BRIGHTNESS OF AN EMC WITH OPERATIONAL CONTROL

(Note: This method can be completed by one individual, but requires operational control to shutoff the EMC)

STEP 1

OBTAIN AN ILLUMINANCE METER.

Purchase or otherwise procure an illuminance meter. Most city/county traffic departments have an illuminance meter, which are also referred to as lux or footcandle meters (lux is the metric measure of illuminance; footcandles is the English measure of illuminance). The illuminance meter must have the ability to provide a reading up to two decimal places and must be set to read footcandles. It is preferred to have an illuminance meter with a screw-mount that allows the sensor to be mounted on a tripod. A tripod ensures that the highly sensitive sensor is held perfectly still; otherwise it may be difficult to obtain an accurate reading.

STEP 2

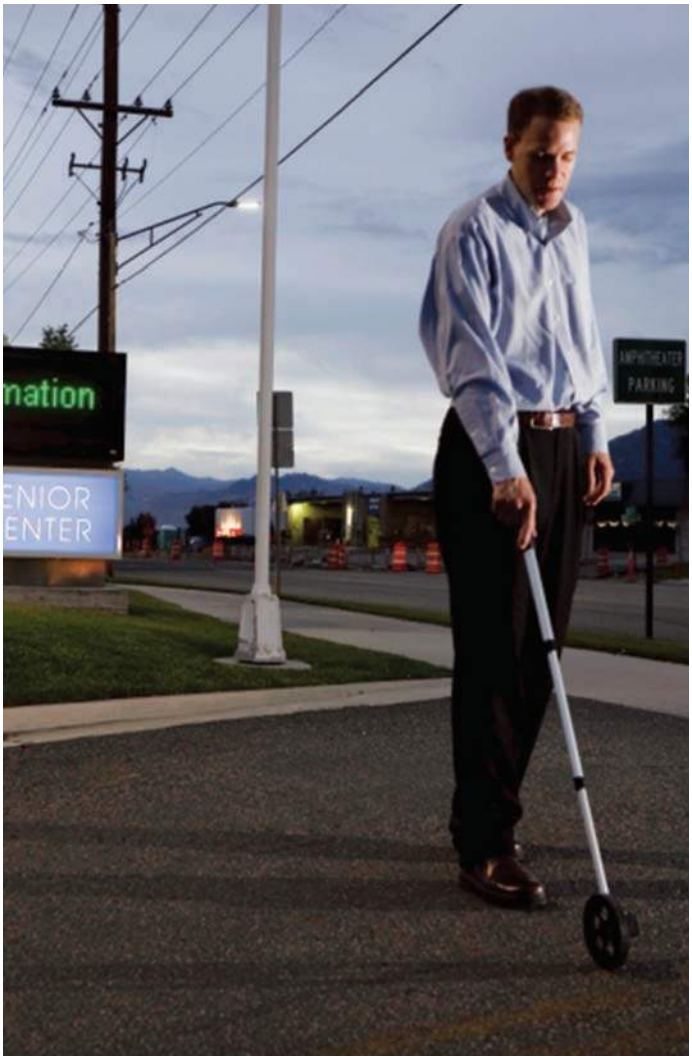
DETERMINE SQUARE FOOTAGE.

Determine the square footage of the face of the electronic message sign (EMC) by multiplying the height and width of the EMC. This information may be available in a permit application, or can be determined by physically measuring the height and width of the EMC. Do not include the sign face square footage attributable to any additional static signs associated with the EMC (if applicable).

STEP 3

DETERMINE THE MEASUREMENT DISTANCE.

Using the total square footage found in Step 2, look up the measurement distance in the table provided in the Recommended Legislative Language on page 8, to determine the distance to measure the brightness of the EMC. The distance should be measured perpendicular to the EMC sign face. The use of a measuring wheel, laser finder or a smartphone app are the most convenient ways to measure the distance.



STEP 4

PREPARE THE DISPLAY FOR TESTING.

Ensure that the EMC is programmed to alternate between a solid white (or in the case of a monochrome display – the solid color of the display) message and a blank message. The community may require that the sign owner cooperate with testing by programming the EMC for testing upon written notice.

STEP 5

USE AN ILLUMINANCE METER TO MEASURE THE BRIGHTNESS OF THE EMC.

Mount the sensor of your illuminance meter to a tripod and orient the sensor directly towards the face of the EMC at the measurement distance determined in Step 2.

Ensure that the illuminance meter is set to measure footcandles up to two decimal places. As the display alternates between a solid white message and an "off" message, note the range of values on the illuminance meter. If the difference between the readings is less than 0.3 footcandles, then the brightness of the display is in compliance. If not, the display will need to be adjusted to a lower brightness level using the manufacturer's recommended procedures.

STEP 6

ENSURE THAT THE DISPLAY CAN ADJUST TO DIFFERENT AMBIENT CONDITIONS.

Inspect the sign to ensure that it incorporates a photocell or other technology to ensure that the display can adjust according to ambient lighting conditions.

As the display alternates between a solid white message and an "off" message, note the range of values on the illuminance meter. If the difference between the readings is less than 0.3 footcandles, then the brightness of the display is in compliance.

HOW TO MEASURE THE NIGHT-TIME BRIGHTNESS OF AN EMC—WITHOUT CONTROL OF THE SIGN

(Note: This method requires two individuals, but does not require operational control of the EMC.)

There will be instances where the EMC illumination needs to be evaluated to ensure that it does not exceed the brightness levels established in the municipal sign ordinance. If the municipality is unable to obtain access to the sign controls or attempting to take the measurement after business hours, this method should be followed.

Unlike the six-step process described previously, this process measures the difference in brightness between the sign in operation and when the sign is completely blocked from the illuminance meter. This procedure is extremely simple and requires only an illuminance meter and a piece of painted cardboard cut to the proper size.

STEP 1

OBTAIN AN ILLUMINANCE METER.
(See previous Step 1)

STEP 2

DETERMINE SQUARE FOOTAGE.
(See previous Step 2)

STEP 3

DETERMINE THE MEASUREMENT DISTANCE.
(See previous Step 3 or use $\sqrt{(\text{Area of Sign in Sq. Ft. x } 100)}$)

STEP 4

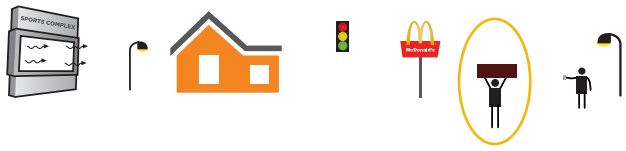
POSITION THE TESTERS.

Based on the size of the digital display, the person conducting the test should position themselves as close to directly in front of the digital display as practical, at the appropriate distance (calculated in Step 3).

A helper should position themselves about 7 ft. to 10 ft. in front of the light meter and hold up an opaque, black sheet of material that is roughly 12 in. high by 40 in. wide. (Regular cardboard painted matte black works well for this.) The sheet should be positioned so it blocks all light from the EMC, but still allows the remaining ambient light to register on the illuminance meter.

EMC Area	Measurement Distance
24 ft²	49 ft
32 ft²	57 ft
50 ft²	71 ft
100 ft²	100 ft

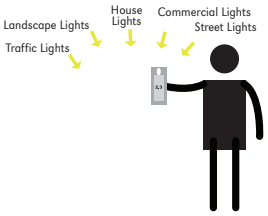
This helper should use a cardboard sheet to block the EMC light from the footcandle meter. This will establish the baseline footcandle reading.



After the cardboard block is held in place, a reading should be taken for the ambient light.

In this example, various light sources are impacting the photocell measuring 2.3 footcandles of ambient light.

This is the baseline for the measurement. Write it down.



STEP 5

USE AN ILLUMINANCE METER.

The illuminance meter should be held at a height of about 5 ft. (which is approximately eye level) and aimed directly at the EMC. The illuminance meter will account for surrounding sources of light or the absence thereof.

In this case our ambient light reading was 2.3 fc. The new light reading with the LED displaying a full white frame cannot read above 2.6 fc or 2.3 (ambient) + 0.3 (threshold). If a full white frame cannot be arranged, watch the meter to see if any ad exceeds 2.6 fc.

At this point, readings should be taken from the illuminance meter to establish a baseline illumination level. (ISA recommends that the illuminance meter is capable of levels to 2 decimal places 0.00).

Once the baseline level is established, add 0.3 footcandles to the baseline level to calculate the max brightness limit. (For example: Baseline reading is 3.15 footcandles. The max brightness level is 3.45 footcandles.)

STEP 6

DETERMINE THE BRIGHTNESS LEVEL.

Remove the opaque sheet from blocking the EMC. Watch the footcandle meter for 3 to 5 minutes to see if the max brightness level is exceeded by any of the images on the sign. If the readings do not exceed the max brightness levels, then the EMC illumination is in compliance.

If any of readings consistently exceed the max brightness level, the lighting level is not in compliance. In this scenario, the municipality will need to inform the sign owner of noncompliance and take appropriate steps to ensure that the EMC be adjusted to a lower brightness level using the manufacturer's recommended procedures.

If any of readings consistently exceed the max brightness level, the lighting level is not in compliance.

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International Sign Association

Finding Common Ground:

Answers to Common Questions About Electronic Message Centers (EMCs)

Finding Common Ground:

Answers to Common Questions Involving On-Premise Electronic Message Centers

Is your community trying to determine how to treat on-premise electronic message center signs (EMCs)? Are you trying to strike a balance between the desire for businesses to use EMCs and community aesthetics? Do you have concerns about the safety of EMCs? Are you confused or frustrated about how to properly regulate these types of signs?

If you have answered in the affirmative to any of these questions, you are not alone. Planners, community officials, small businesses and sign companies have struggled with these questions for several years. As the trade association for the on-premise sign industry, ISA has worked with hundreds of communities across the country on EMC issues, lending our expertise in helping to develop reasonable and beneficial code language governing this modern and innovative sign technology.

Just to clarify, EMCs are not digital billboards, which advertise a good or service that is located away from where the sign is located. Rather, EMCs are digital signs that are located on the premises of the business, and that advertise goods and services that are provided at the location.

(Left) Electronic message center (EMC) / on-premise sign advertising a product that is located at the place of buiness

(Right) Digital billboard / off-premise sign advertising a business away from where the sign is located

There is often confusion regarding on and off-premise digital signs. However, EMCs and digital billboards have very distinct capabilities and purposes, each targets a specific audience and each has traditionally been treated under separate legal and regulatory regimes. For the purposes of this publication, we are focusing solely and exclusively on EMCs.

We have compiled this guide in order to help all stakeholders make informed decisions about EMCs, addressing common concerns and providing the perspective necessary for the development of effective sign regulations. We hope that the information in this publication can assist each community in finding common ground in the quest for appropriate EMC regulation.

International Sign Association

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Before • •

After • •

The traditional multitenant sign at the top is forced to use unimaginative fonts and colors in order to fit in all the businesses; the same multitenant sign on the bottom has added an EMC which advertises each tenant every ten seconds, making the sign less cluttered and more attractive.

EMCs and Aesthetics

Issue

Some communities are concerned with the impact of EMCs on the visual environment. Most concerns regarding aesthetics can be resolved with effective regulation. Proper brightness standards and regulated content presentation standards can resolve the majority of aesthetic concerns. When properly regulated and utilized, EMCs can actually enhance community aesthetics.

The manually-changeable reader board, an ancestor to EMC technology, is common in most communities. Mis-matched letters, bland fonts, and other design limitations make a reader board to electronic message center conversion an improvement in aesthetics. A properly regulated EMC is considered by some to be more attractive than a traditional reader board.

Another example of sometimes aesthetically-displeasing signs is multi-tenant panel signs that can be found in many retail multi-tenant shopping centers. Frequently these signs are packed with a long list of tenants, which are functionally invisible to the motoring public. Such lack of visibility affects the viability of the retail center, and unviable businesses can eventually become an eyesore. Allowing an EMC in a retail shopping center can give tenants the visibility they need, replace functionally invisible signs with an effective sign without increasing over all square footage, and thus improve the aesthetic appearance of the shopping center.

Lack of visibility and the ability to change advertising messages often results in some business owners using alternate methods to get the message out. Ironically, prohibitions or severe restrictions on EMCs can result in the very thing such sign codes are intended to avoid; namely, visual clutter by excessive signage. By allowing properly regulated EMCs to operate in a community, you can avoid these aesthetically objectionable behaviors from occurring. If a business owner is able to use an EMC, the need for excessive banners and other forms of visual clutter are eliminated.

Associating these signs with Las Vegas is a common concern voiced in the debate over EMCs and aesthetics. A closer look at the size, height, spacing and content delivery methods on signs on the Las Vegas strip reveals that this comparison is inaccurate. Signs on the Las Vegas strip have few or no set back requirements, spacing limitations, or height restrictions. It is not uncommon for signs on the Las Vegas strip to exceed two hundred feet in height, and most of the larger signs exceed several thousand square feet in total sign area. Most communities do not even come close to allowing signs such as these. Unless your community allows signs of this magnitude, it is highly unlikely that your community will resemble anything like Las Vegas.

Recommendations

The key to addressing aesthetic concerns regarding EMCs is to ensure that the message brightness, duration, and transition method are properly regulated and enforced in conformity to community aesthetic values. EMCs in and of themselves are not aesthetically displeasing.

EMCs and Code Enforcement

International Sign Association

Issue

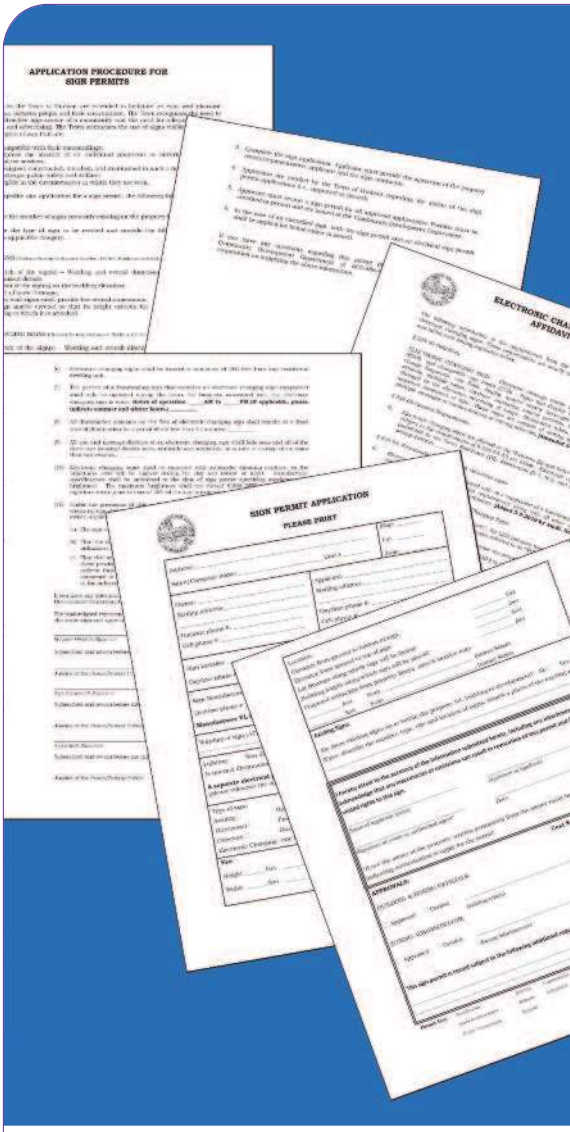
Local sign codes often have provisions regarding the regulation of EMCs. Sign companies help their customers learn what regulations govern their EMCs when the product is sold. Once the EMC is permitted, it is up to the sign owner to make sure that they program their sign so that it is in compliance with the local sign code. EMC manufacturers can only build signs that are capable of compliance.

In some rare instances, out of fear that some extra-judicial programming will take place after an EMC is permitted and operational, some local regulators have attempted to take the position that such signs are prohibited altogether.

Recommendations

The sign industry encourages strict compliance with sign codes and should always educate customers on how to properly operate EMCs. However, occasionally EMCs are programmed beyond the limitations of local regulation by their owners. Acknowledging the difficulty of city code enforcement, one way of encouraging proper and legal use of these signs by their owners is to have the owner sign an affidavit at the same time the sign is permitted in which the owner agrees to abide by the local regulations or else be cited and pay a fine.

There is no legal basis to deny a static-display electronic sign, as it is legally indistinguishable from any other illuminated sign. Car usage is not prohibited merely because cars are designed so that they can exceed the speed limit; tickets are issued to the driver if they *do* exceed the speed limit. Likewise, if a sign owner *actually* violates the zoning or sign code, the remedy is to cite them for the violation, not to presume that they will do so and refuse to issue permits at the outset.



Cities can require EMC users to promise that they will program and use their signs in compliance with the local sign code, including imposing penalties for knowingly violating the ordinance.

This EMC user can only use amber-colored text messages, which can be bland and limit the creativity of their business's message.

EMCs and Color Restrictions

Issue

Some jurisdictions have established restrictions on the types of content displayed on EMCs. Among the restrictions are limits to the number of colors displayed or a prohibition on full-color images. Many of these limitations are based on a belief that multiple colors or "photo-quality" images are more intrusive or distracting to motorists. We believe that restrictions on the appearance of EMC displays fail to advance any compelling governmental interest and represent an impermissible content-based regulation.

Color-Based Limits

Color restrictions can take the form of limiting the total number of colors displayed ("**one color** only" or "no more than 3 colors") or specifying the colors allowed ("amber only" or "no red lights"). As a practical issue, most EMCs are comprised of RGB pixels capable of displaying full color images. In order to display most colors, the image actually consists of a mixture of individual LEDs displaying red, green, or blue in varying amounts. Even if the display appears to be a single color ("white"), when viewed at a close distance the EMC can be seen to generating multiple colors of light that blend together as the viewing distance increases. Restrictions on the number of colors are problematic to enforce as questions of color shading and the "black" appearance of unlit LEDs complicate the ability to precisely determine the number of colors being displayed.

Additionally, many EMCs are designed to display information in a format similar to conventional signs. A filling station commonly displays the prices of gasoline, diesel fuel, ethanol and kerosene using different colored numerals. If a manual changeable copy panel can display a message using multiple colors, an EMC should be afforded the ability to display the identical message.

Recommendations

Any attempt to regulate EMCs based on the appearance of the display may run afoul of judicial scrutiny of content-based regulations. Other federal protections on the display of registered trademarks also may affect controls on the display of logos (for example, the Federal Lanham Trademark Act.)

Any EMC should be allowed to display text information, graphics, or images identical to a permanent display on a non-EMC sign. EMC-specific regulations should avoid restrictions on the information displayed and be limited to appropriate controls on sign brightness, size, and message change.

EMCs and Definitional Problems & Solutions

International Sign Association

Issue

When it comes to drafting and enforcing signs codes, it is important for the language and definitions have clear, reasonable, workable and easily understandable meanings. This is especially true when it comes to definitions in the part of the sign code that covers EMCs. This language can often be technologically incorrect, difficult to implement, and unworkable in practice, resulting in sign codes that don't benefit regulators, sign users or the community.

Terms that need consistent clarification in regard to EMC regulatory language can be as basic as the definition of a changeable message sign. There are two kinds of such signs, manually-changed and electronically-changed. Most manually-changed signs involve a background surface with horizontal channels, into which plastic letters and numbers are inserted into the channels on the sign face. The message must be changed by having an employee or technician remove the existing plastic letters and replacing them with the new message.

On the other hand, for the most part EMCs use light emitting display technologies such as LEDs. These kids of changeable message signs are operated via computer at a remote location and can change messages as fast as they can be programmed. For the purposes of this document, we are focusing on the definitional issues that arise when it comes to EMCs

Recommendations

EMC regulatory language should cover certain technical capabilities of such signs such as:

ANIMATION — the usage of multiple frames running at a fast enough speed that the human eye perceives the content to be in continuous movement.

DISSOLVE — a mode of message transition on an EMC accomplished by varying the light intensity or pattern, where the first message gradually appears to dissipate and lose legibility simultaneously with the gradual appearance and legibility of the second message.

FADE — a mode of message transition on an EMC accomplished by varying the light intensity, where the first message gradually reduces intensity to the point of not being legible and the subsequent message gradually increases intensity to the point of legibility.

FLASHING — an intermittent or flashing light source where the identical EMC message is constantly repeated at extremely fast intervals.

FRAME — a complete, static display screen on an EMC.

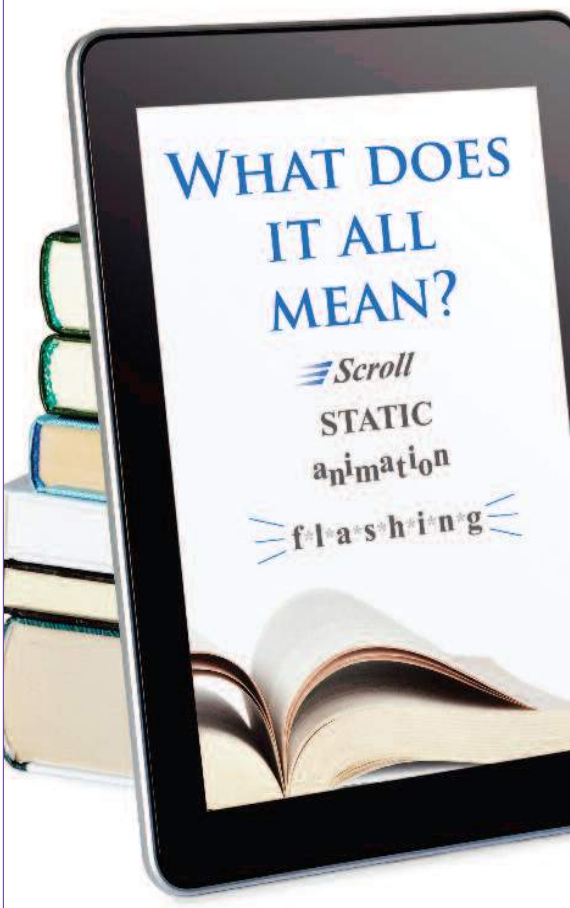
FRAME EFFECT — a visual effect on an EMC applied to a single frame to attract the attention of viewers.

SCROLL — a mode of message transition on an EMC where the message appears to move vertically across the display surface.

STATIC MESSAGE — messages that contain static messages only, and do not have movement, or the appearance or optical illusion of movement during the static display period, of any part of the sign structure, design, or pictorial segment of the sign, including the movement or appearance of movement.

TRANSITION — a visual effect used on an EMC to change from one message to another.

TRAVEL — a mode of message transition on an EMC where the message appears to move horizontally across the display surface.



The school sign on the top has been allotted a very small area for its EMC as compared to the school sign on the bottom. The school sign on the bottom is therefore able to present more information in a more legible fashion on the screen in comparison.

EMCs use light emitting diodes, or LEDs, which are one of the more energy-efficient forms of lighting available today.

EMCs and Digital Area Size Limitations

Issue

Some jurisdictions have adopted restrictive square footage area restrictions for EMCs. For example, restrictive allowable square footage for EMCs would be to only allow 25% of the maximum square footage for a sign. We believe that if square footage restrictions for electronic message centers are too restrictive this may lead to limiting the type of message that a business can display. A smaller EMC may only lend itself to effectively displaying text, restricting the business to utilize images. Since EMC's are considered such an effective method for a business to advertise, this will also have a potential negative economic impact on a business.

Economic Considerations

EMCs have proven to be a very cost effective method of advertising, especially when compared to radio, television, and print media. A typical small business does not have the recognition of a national chain. Therefore, affordable and effective advertising that is provided by an EMC can be an important factor of a successful business.

Recommendations

In support of the business community and particularly small business, no square footage area restrictions or minimal restrictions of the allowable square footage, are recommended for EMCs. This will afford a business the flexibility to display images or text providing, full marketing advantage afforded by electronic message centers. By allowing the business community greater flexibility in the allowable square footage of EMC's can also lead to overall support and economic enhancement of the community. An additional advantage of allowing minimal restrictions on the allowable area for EMC's will enable enhanced messaging for community or civic events.

EMCs and Energy Consumption

Issue

Some jurisdictions are concerned about the amount of energy consumption by electronic signs, including EMCs. Modern EMCs use light-emitting diode or "LED" lighting technology to produce changeable messages. LED lighting is one of the most energy efficient forms of lighting, according to the U.S. Department of Energy.

Recommendations

Gains in LED efficiency over the past few years have been dramatic. Many EMC manufacturers have reported efficiency gains of almost 80% over a five-year period, and it appears that the trend towards more efficiency will continue. EMCs are on the cutting edge of the most energy efficient sign technologies.

When compared to other forms of advertising such as print media, radio, or television, and EMC is a more environmentally responsible form of advertising. The energy, paper, and equipment used in other forms of advertising far outweigh the energy consumption and overall environmental impact of an EMC.

EMCs and the Highway Beautification Act

International Sign Association

Issue

The Highway Beautification Act (23 USC 131) of 1965 calls for control of outdoor advertising or billboards within 660 feet of the nation's Interstate Highway System and the existing federal-aid primary highway system.

Since its passage, the Highway Beautification Act has been consistently interpreted as exempting on-premise signs under its jurisdiction. However, in recent years a few state and federal officials have mistakenly sought to regulate on-premise signs using the Act as justification.

Recommendations

The Highway Beautification Act cannot be used as justification for government officials to regulate on-premise signs. The HBA does not apply to all signs within 660 feet of a primary aid highway or interstate system. 23 USC 131(c)(2) and 23 USC 131(c)(3) of the Act provide exceptions for on-premise signs, including for on-premise EMCs. It was never the legislative intent of the drafters of the Highway Beautification Act or its subsequent amendments to place on-premise signs under any federal control.

President Lyndon Johnson and his wife "Lady Bird" at the signing of the 1965 Highway Beautification Act, which regulates outdoor advertising (billboards), not on-premise signs

Electronic message centers have often been the target of moratoriums by local officials. However, prohibiting these types of signs (or other typess, such as pole signs or window signs) can often hurt existing businesses in the community and could discourage the development of new businesses.

EMCs and Moratoriums

Issue

Moratoriums are not necessary to change a sign ordinance unless it can be proven that specific kinds of signs imminently threaten public health and safety. Communities should be able to research options and revise their sign codes without resorting to moratoriums.

Many communities enact temporary moratoriums on certain kinds of signs while they consider how to regulate these specific signs. During this period of time, permits are not issued for the specific types of signs. In some cases, a temporary moratorium leads to a permanent ban on the kinds of signs in question.

Recommendations

ISA believes that sign moratoriums make for poor public policy for several reasons, including the following:

(1) moratoriums can have the affect of favoring businesses which have the targeted signs already in existence;
(2) government signs are often not included under moratoriums;
(3) moratoriums often take place during important economic opportunities (i.e. Christmas, summer tourism season etc) for local businesses; and
(4) moratoriums could discourage development of new businesses.

Most importantly, sign moratoriums can usually be avoided by effectively involving and communicating with the appropriate community stakeholders.

If a community elects to enact or extend a sign moratorium, it should be used as a last resort, and only then in furtherance of an imminent health or safety concern. A sign moratorium should be limited to the shortest possible duration.

EMCs and Night-time Brightness

International Sign Association

Issue

EMCs that are too bright at night can be offensive and ineffective. EMC brightness at night is an issue where sign users, the sign industry, and community leaders have a common goal: ensuring that EMCs are appropriately legible. The messages that these signs convey can be rendered unattractive and perhaps even unreadable if they are programmed too bright when it is dark outside.

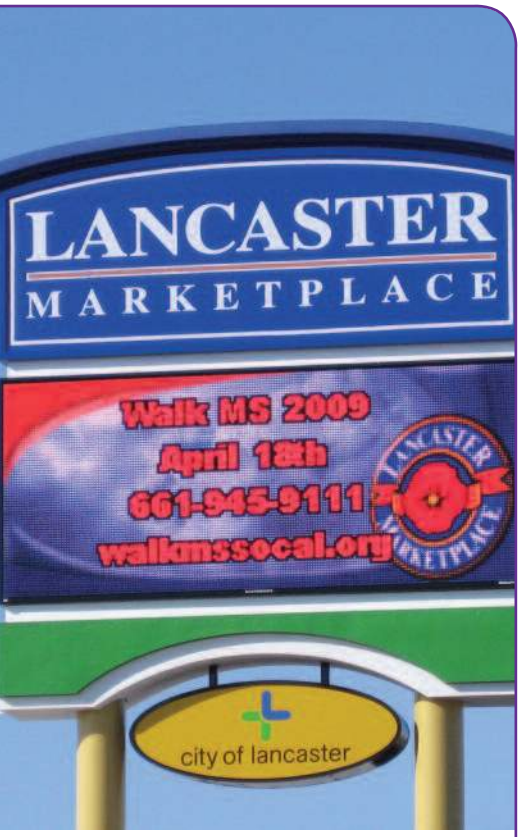
That's why many sign companies recommend to their customers that in order for these signs to be most effective, their brightness be set at such a level to be visible, readable and conspicuous.

Recommendations

In 2008, the International Sign Association (ISA) retained Dr. Ian Lewin of Lighting Sciences to help the industry develop scientifically-researched, understandable recommendations for EMC brightness. Dr. Lewin is a past chair of the Illuminating Engineering Society of North America (IES), and is greatly respected within the lighting field. His work for ISA was conducted with the input of experts within the sign industry.

As a result of this research, the recommended night-time brightness level for EMCs is 0.3 foot candles above ambient light conditions when measured at an appropriate distance. This is a lighting level that works in theory and in practice. Dozens of jurisdictions across the country have adopted these standards, either in whole or in part.

Included with this research and recommendations are model statutory language and six short steps to help guide the process. You can find these EMC Night-time Brightness Recommendations at www.signs.org/brightness.



This shopping center's electronic message center (EMC) is communicating a message not about any goods or services sold on the property, but about a non-commercial community-oriented event that is happening at a place other than at the location of the sign. It is perfectly acceptable for an on-premise EMC to broadcast such a non-commercial message; however, if the same sign were to communicate a commercial message about a store in the next town or advertise for a product that was not sold at that particular location, it would be in danger of losing its permitted status as an on-premise sign and could instead be classified as an off-premise sign. This new classification would usually entail undergoing a new permitting process, additional fees and other arduous procedures.

EMCs and Off-Premise Messages

Issue

An on-premise sign is a communication device whose message and design relate to a business, an event, goods, profession or service being conducted, sold, or offered at the same location as where the sign is erected. An off-premise sign is any sign that is not appurtenant to the use of the property, a product sold, or the sale or lease of the property on which it is displayed and that does not identify the place of business as purveyor of the merchandise, services, etc. advertised upon the sign.

When an on-premise EMC is programmed to include among its several messages one that advertises a business, an event, goods, profession or service being conducted, sold, or offered at a different location from where the sign is erected, it may be viewed by some government officials as being an off-premise sign, and need to be permitted and regulated as such. This can have adverse impacts on both the individual sign users as well as other future sign users who will need approval from zoning or permitting authorities.

Recommendations

ISA believes that the messages that should be displayed on signs permitted under on-premise sign regulations should be messages relating to a business, an event, goods, profession or service being conducted, sold, or offered at the same location as where the sign is erected. ISA also believes that on-premise signs should be permitted to display noncommercial messages and public service announcements without risk of losing their on-premise status or exemption from outdoor advertising restrictions.

EMCs and Text-Only Restrictions

International Sign Association

Issue

Some jurisdictions have established restrictions on the types of content displayed on EMCs. Among the restrictions are prohibitions on high-quality images. Many of these limitations are based on a belief that "photo-quality" images are more intrusive or distracting to motorists. We believe that restrictions on the appearance of EMC displays fail to advance any compelling governmental interest and represent an impermissible content-based regulation.

Alphanumeric Limits

Alphanumeric controls are designed to limit displays to the 62 Latin letters and Arabic numbers. Photographic images, graphics, and other characters are prohibited. While alphanumeric text allows messages to be expressed, the limited displays are not necessarily as effective as images can be. As noted in the APA's *Street Graphics and the Law*, (pictographic) images are encouraged as they are more easily comprehended than text. Additionally, images allow businesses to express the products offered at their location using registered trademarks and logos, which are much more readily identified than words expressing the same message.

Recommendations

Any attempt to regulate EMCs based on the appearance of the display may run afoul of judicial scrutiny of content-based regulations. Other federal protections on the display of registered trademarks also may affect controls on the display of logos.

Any EMC should be allowed to display text information, graphics, or images identical to a permanent display on a non-EMC sign. EMC-specific regulations should avoid restrictions on the information displayed and be limited to appropriate controls on sign brightness, size, and message change.

The Burger King EMC photo at the top can only use text, while the Burger King EMC photo on the bottom can also show pictures, logos, and other images.

Pictured is an official District of Columbia Department of Transportation digital sign, with a two-second time interval, informing motorists during rush-hour on a high-traffic area about their distracted driving law. That our nation's capital uses this type of signage technology to educate drivers demonstrates that digital technology enhances safe traffic conditions.

EMCs and Traffic Safety

Issue

Many jurisdictions that consider regulations on EMCs fear that allowing this technology to be used in signage will lead to an increase in traffic accidents. These fears are unfounded. The LED technology inherent in electronic message centers have been studied for over 30 years and have never been found to be hazardous to traffic safety. Studies from reputable organizations such as Virginia Tech Transportation Institute, Tantala Associates and even the Federal Highway Administration have found that digital signs are appropriate along the nation's roadways.

The Federal Government has accepted the use of this technology in signage along the roadways. Over forty State Governments have specifically adopted regulations allowing for its usage. In fact, digital signs are found throughout the United States.

Recommendations

There are two basic types of safety studies in the United States: Statistical and Human Factors. Neither type of study has ever shown that digital signs cause an increase in accidents or are a hazard to the traveling public.

Statistical studies look at multiple locations and attempt to determine whether the introduction of a stimulus (in this instance an EMC) caused an increase in accidents. The study begins by looking at traffic data at specific locations, for a number of years before the digital sign is erected. This data provides a baseline by which to judge whether there was an increase in accidents. The researcher then analyzes the same data that is present for these locations after the digital sign is erected. No statistical study has ever shown that digital signs cause an increase in accidents. In fact, a 2012 study by Texas A&M University researched over 120 locations of EMCs in four states, and found that there is "no statistically significant impact between the installation of on-premise digital signs and an increase in crashes."

Human Factors studies look at the way in which a stimulus affects a driver. Such studies have been done on any number of stimuli: eating and drinking, changing the radio-A/C dials, texting, etc. This type of study looks at how a driver may become distracted by a stimuli and how such distraction could increase the likelihood of an accident. No such study has ever found that digital signs are so distracting as to be the cause of an accident.

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RESEARCH

Night-time Brightness Level Recommendations for On-Premise Electronic Message Centers

Updated August 2016

PRODUCED BY:

International Sign Association

TABLE OF CONTENTS

LEARN MORE ABOUT EMCS

The International Sign Association offers an Electronic Message Center (EMC) Resource Center, with resources on:

- EMCs and traffic safety
- A framework for developing EMC sign code language
- The differences between EMCs and digital billboards

www.signs.org/local

ADDITIONAL SIGN CODE RESOURCES

The International Sign Association has developed numerous tools to help communities develop better sign codes. All are housed at www.signs.org/local, including:

- The Supreme Court ruling, *Reed v. Town of Gilbert*
- Model sign codes
- Best practices in regulating temporary and wayfinding signs
- The Economic Impact of On-Premise Signs

ISA's advocacy team is available to provide complimentary assistance on sign codes and sign-related issues.

Contact SignHelp@signs.org or 703.836.4012.

INTRODUCTION

ELECTRONIC MESSAGE CENTERS (EMCs)

Electronic message centers, or EMCs, continue to grow in popularity for business and community use. You may have heard EMCs being referred to as changeable message displays or digital signs.

EMCs are *not* digital billboards, which advertise a good or service that is located away from the sign. Rather, EMCs are digital signs that are located *on the premises,* and that advertise goods and services that are available at the location.

Electronic Message Center (EMC)/on-premise sign advertising a bank that is located on the same premises as the sign

Digital billboard/off-premise sign advertising an automobile business in another location

There is often confusion regarding on- and off-premise digital signs. However, EMCs and digital billboards have very distinct capabilities and purposes, each targets a specific audience and each has traditionally been treated under separate legal and regulatory regimes, a zoning practice which was noted in the 2015 U.S. Supreme Court ruling in *Reed v. the Town of Gilbert*. For the purposes of this publication, *we are focusing solely and exclusively on EMCs*.

EMCs that are too bright at night can be offensive and ineffective. Night-time EMC brightness is an issue where sign users, the sign industry, and local offices have a common goal: ensuring that EMCs are appropriately legible. We know the messages that these signs convey can be rendered unattractive and perhaps even unreadable if they are programmed too bright.

That's why many sign companies recommend to their customers that in order for these signs to be most effective, their brightness be set at such a level to be visible, readable and conspicuous.

The International Sign Association (ISA) retained noted lighting expert Dr. Ian Lewin of Lighting Sciences to help the industry develop scientifically-researched, understandable recommendations for EMC brightness. Dr. Lewin was a past chair of the Illuminating Engineering Society of North America (IES), and was greatly respected within the lighting field. His work for ISA was conducted with the input of experts within the sign industry.

As a result of his research, Dr. Lewin recommended two different brightness settings based on whether the EMC was located in an area of high or low ambient light. After field testing and utilizing Dr. Lewin's recommendations, it was determined that using the more conservative recommendation is appropriate in areas of both low and high ambient light. In order to simplify Dr. Lewin's recommendations, and to take a more reasonable approach to ensure that EMCs are sufficiently visible but not overly bright, ***it is recommended that EMCs not exceed 0.3 footcandles over ambient lighting conditions when measured at the recommended distance, based on the EMC size.***

The research and the recommendations contained in this report pertain only to EMCs, not traditionally internally illuminated signs, such as these channel letter and neon signs below. EMCs use a different lighting technology than most of these types of signs, and as such the scientific approach differs.

Community leaders should understand that, while it is recommended that brightness measurements be taken perpendicular to the sign, sign viewers rarely see the sign at that same perpendicular approach. At any viewing point away from or off the forward angle, the apparent brightness will be reduced. In other words, the measurements will capture the recommended brightness levels, but, unless viewers are looking at the sign directly perpendicular, they will not perceive the brightness at the full level.

We have provided recommended statutory language and tips to measure brightness with and without control of the EMC. If you need further assistance, feel free to contact ISA, signhelp@signs.org or at (703) 836-4012 to answer any of your EMC questions.

FOOTCANDLES VS. NITS: WHICH MEASUREMENT IS BETTER?

This document recommends communities adopt illumination measurements in footcandles as compared to nits. Here are a few reasons why more than 200 localities and many state departments of transportation have adopted the footcandle measurement for EMCs:

FOOTCANDLES

Measures illuminance
Accounts for ambient light conditions
Luxmeter measuring device $100
"Twilight" measurement possible
Measures light impact and appearance
Works with roadway lighting standards
Easier to check and enforce

NITS

Measures luminance
Measures only the amount of brightness emitted
Luminance spectrometer (nit gun) - $1,000
Does not allow adjustment based on ambient light
Does not measure appearance
Difficult to measure accurately
Difficult to enforce

* While the main advantage of using nits as compared to footcandles is that daytime measurement is possible, EMC brightness is typically more of an issue at night.

CASE STUDY: Columbus, Ohio

COMMUNITY . . . . . **Columbus, Ohio**
POPULATION. **836,000**
LOCATION . . . . . As Ohio's largest city and state capitol, Columbus is the country's 15th largest city.
SPECIFIC EMC ISSUE. . . . . Crafting a reasonable, enforceable code that addresses complaints while preserving the ability for businesses to use what it termed automatic changeable copy signs.

As automatic changing copy signs—as Columbus refers to EMCs—grew in use, so did community complaints.

By 2011, city planners began to edit the graphics codes to limit special effects. The goal was to continue to allow for a variety of commercial graphics, "but not at the expense of neighborhoods," said Lisa Russell, the city's Planner II who facilitated the code development project.

The city had in place certain limits on automatic changing copy signs, aka EMCs, in the graphics code, limiting their use to commercial and manufacturing zoning districts and requiring that only half of the sign could be used for the changeable copy. But signs lacked brightness limits and a hold time.

Russell led a team to draft the new code, which incorporated a brightness limit for both on-premise and off-premise signs. The testing method also is included in the code.

It was the result of much scientific discussion. "I believe that the best answer is revealed if you have enough information," Russell said. The committee included a community group leader who was an architect specializing in lighting and representatives from the sign and graphics industry.

"When we started exploring brightness, it appeared the footcandle method was the way to go," Russell said. "However, some group members wanted us to explore the luminance method. ISA believed so strongly that the luminance method was problematic that they brought a demonstration to us."

The demonstration included a field trip to visit a sign to show the impact of the two measurement methods. "They wanted to make sure that we didn't go down the wrong path. They rented a lift and showed us that with the luminance method you'd have to get up in the lift, raise it and shine the nit gun at the sign. With the footcandle meter, you can stand on the ground."

Russell helped the group to see that the "members of the professional sign and graphics industry are not the same as end-users of signs, such as an owner of a carryout who wants to draw attention to his shop over others. We all had an interest in developing reasonable regulations instead of just banning these signs. We also did not want to take away the rights that businesses had to display electronic signs."

The new code has significantly lessened complaints about sign brightness. And when a complaint is received, the code enforcement officers have a verifiable process for determining whether the sign complies with the code.

CASE STUDY: Kitsap County, Washington

COMMUNITY . . . . . **Kitsap County, Washington**
POPULATION. **260,000**
LOCATION . . . . . Across the Puget Sound from Seattle and bordered by rural communities on the west. It is the third most densely populated county in the state.
SPECIFIC EMC ISSUE. . . . . Existing codes did not cover electronic signs.

As a "transition" county between rural Washington and the metropolitan city of Seattle, Kitsap County had the challenges of creating regulations for electronic signs that fit the county's dual personalities.

"The first step was to identify where these signs would be allowed," said Darren Gurnee, a planner with the county. "We wanted to make sure these were restricted to areas of increased density and primarily non-residential use such as industrial zones and commercial zones within the urban growth area."

Previously, the county had allowed electronic signs "as a matter of interpretation," Gurnee said. Crafting more defined electronic sign regulations would provide a measure of stability—and help business owners know what was allowed and where. An added bonus: Gurnee felt the signs would be more attractive than the block letters signs that had to be changed manually.

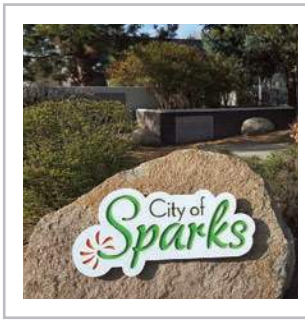
While the county wanted to make it easier for businesses to convert existing static monument signs into electronic signs, it also wanted to ensure that the regulations were not written in a way that would allow billboards to convert.

"We were able to craft our regulations in a way that required signs be brought into conformance before any change could be made," Gurnee said. "Billboards were non-conforming, so that would not be an issue."

ISA provided Gurnee with industry standards—contained in this publication—and some background on the technology that today's electronic signs offer, such as automatic dimming. It also incorporated some of the recommended language on animation, hold times and transitions.

"The regulation is written in a way that it would be easy to enforce," Gurnee said, and easy to understand, without the ambiguities contained in the previous method. The ending code created a perfect fit for both of the community's personalities.

CASE STUDY: SPARKS, NEVADA



COMMUNITY . . . . . **Sparks, Nevada**
POPULATION. **93,500**
LOCATION . . . . . A rapidly growing community, Sparks is located near Lake Tahoe, California, and Reno, Nevada, and is Nevada's fifth largest city.
SPECIFIC EMC ISSUE. . . . . Existing regulations were difficult to enforce and outdated.

Sparks, Nevada had existing regulations of electronic message centers—or electronic variable signs as the community deemed them. But "it wasn't very explicit," said senior planner Karen Melby. "The brightness standards were in lumens, which we didn't even know how to measure."

The regulations were outdated as well—having been drafted in 2002. Technology had changed dramatically and the costs of EMCs had dropped, putting them in the range of more businesses' budgets. "We felt we could see more coming and felt that we needed to get a handle on it."

As a first step, planners required that those seeking an EMC permit meet their standards before approval was granted, but nothing was written into the code. That method can create problems.

So Melby led the city through the code revision process. She sought out industry expertise from both the planning community and the sign and graphics industry. For industry insight, she turned to ISA. ISA provided feedback on how other communities were regulating electronic message centers, and recommendations on what was working for these communities.

One outside group felt strongly that the standards should be regulated in nits, not footcandles. They brought in an expert who opposed the proposed regulations. But Melby held strong on the issue of footcandles. "In my research, it seems like footcandle is what you can see with your eyes while a nit is pinpointing a spot on a sign. When you look at a sign, you're looking at the whole thing, not just one small spot."

The city adopted the widely recognized standard of 0.3 footcandles above ambient light, using the distance measurements outlined in this publication. Melby took that table, determined the formula and wrote the formula into the code.

The community allows smaller signs—those under 32 square feet—to include scrolling, while those larger do not.

The result has been a city that has successfully navigated the balance between business interests and community aesthetics. "We've had very few complaints," Melby said. "When we do get a complaint about a sign being too bright, we go out and measure it. When they bring it down to standards, we don't get complaints."

Being able to use a simple light meter to measure brightness is far easier than simply guessing whether the sign is in compliance, Melby said. "The other method (measuring nits) was really based on opinion. What may seem bright to me may not seem bright to you. Now, we can say, 'This is what the meter says.'"

By having clear standards that are easier to enforce, both community and business win.

EXECUTIVE SUMMARY

ISA ELECTRONIC MESSAGE CENTER NIGHT-TIME BRIGHTNESS RECOMMENDATIONS

This summary has been developed with an understanding that EMCs that are unreasonably bright are not effective for the communities or end users. This intends to help communities and stakeholders develop brightness standards for on-premise EMCs. The summary comprises:

1) An overview of the importance of ensuring appropriate brightness,
2) Technology utilized to ensure appropriate brightness, and
3) Recommended brightness standards

1. Overview of the importance of ensuring appropriate night-time brightness.

EMCs that are too bright at night can be offensive and ineffective. There are significant advantages to ensuring than an electronic display is not overly bright. These advantages include:

- Conservation of energy
- Increased life expectancy of the electronic display components
- Building goodwill with the community
- Ensuring the legibility of the display

It is in the best interest of all stakeholders to ensure that EMCs are sufficiently bright to ensure clear legibility, while at the same time avoiding a display that is overly bright.

2. Technology utilized to ensure appropriate brightness.

Most EMCs are designed to produce sufficient brightness to ensure clear legibility during daylight hours. However, daytime brightness settings are usually inappropriate for night-time viewing. The following general methods are used to dim an EMC for appropriate night-time viewing:

1. ***Manual Dimming.*** Using this method, the sign operator dims the display in response to changing ambient light conditions.
2. ***Scheduled Dimming.*** Sunset-sunrise tables allow an EMC to be programmed to dim at the same time that the sun sets and rises. This method is generally acceptable, but is more effective when used as a backup to automatic dimming controls capability, such as photocell technology.
3. ***Photocell Technology.*** An EMC that utilizes photocell technology can automatically dim as light conditions change. A photocell sensor alerts the display to adjust brightness according to ambient light conditions.

3. Recommended night-time brightness standards.

Dr. Lewin recommended the development of brightness criteria based on the Illuminating Engineering Society's (IES) well-established standards pertaining to light trespass, IES Publication TM-11-00. The theory of light trespass is based on the concept of determining the amount of light that can spill over (or "trespass") into an adjacent area without being offensive.

In order to simplify Dr. Lewin's recommendations, and to take a more reasonable approach to ensure that EMCs are sufficiently visible but not overly bright, **it is recommended that EMCs not exceed 0.3 footcandles over ambient lighting conditions when measured at the recommended distance, based on the EMC size.**

Email signhelp@signs.org to receive Dr. Lewin's original research.

...it is recommended that EMCs not exceed 0.3 footcandles over ambient lighting conditions when measured at the recommended distance, based on the EMC size.

RECOMMENDED LEGISLATIVE LANGUAGE

Electronic Message Center (EMC) Criteria: The night-time illumination of an EMC shall conform with the criteria set forth in this section.

A. EMC Illumination Measurement Criteria: The illuminance of an EMC shall be measured with an illuminance meter set to measure footcandles accurate to at least two decimals. Illuminance shall be measured with the EMC off, and again with the EMC displaying a white image for a full color-capable EMC, or a solid message for a single-color EMC. All measurements shall be taken as close as practical to a perpendicular plane of the sign at the distance determined by the total square footage of the EMC as set forth in the accompanying Sign Area of a Sign versus Measurement Distance table.

B. EMC Illumination Limits: The difference between the off and solid-message measurements using the EMC Measurement Criteria shall not exceed 0.3 footcandles at night.

C. Dimming Capabilities: All permitted EMCs shall be equipped with a sensor or other device that automatically determines the ambient illumination and programmed to automatically dim according to ambient light conditions, or that can be adjusted to comply with the 0.3 footcandle measurements.

D. Definition of EMC: A sign that utilizes computer-generated messages or some other electronic means of changing copy. These signs include displays using incandescent lamps, LEDs, LCDs or a flipper matrix.

SIGN AREA VERSUS MEASUREMENT DISTANCE

AREA OF SIGN sq. ft.	MEASUREMENT (ft.)
10	32
15	39
20	45
25	50
30	55
35	59
40	63
45	67
50	71
55	74
60	77
65	81
70	84
75	87
80	89
85	92
90	95
95	97
100	100
110	105
120	110
130	114
140	118
150	122
160	126
170	130
180	134
190	138
200	141
220	148
240	155
260	161
280	167
300	173

** For signs with an area in square feet other than those specifically listed in the table (i.e., 12 sq ft, 400 sq ft, etc), the measurement distance may be calculated with the following formula: Measurement Distance = $\sqrt{\text{Area of Sign Sq. Ft. x } 100}$*

HOW TO MEASURE THE NIGHT-TIME BRIGHTNESS OF AN EMC WITH OPERATIONAL CONTROL

(Note: This method can be completed by one individual, but requires operational control to shutoff the EMC)

STEP 1

OBTAIN AN ILLUMINANCE METER.

Purchase or otherwise procure an illuminance meter. Most city/county traffic departments have an illuminance meter, which are also referred to as lux or footcandle meters (lux is the metric measure of illuminance; footcandles is the English measure of illuminance). The illuminance meter must have the ability to provide a reading up to two decimal places and must be set to read footcandles. It is preferred to have an illuminance meter with a screw-mount that allows the sensor to be mounted on a tripod. A tripod ensures that the highly sensitive sensor is held perfectly still; otherwise it may be difficult to obtain an accurate reading.

STEP 2

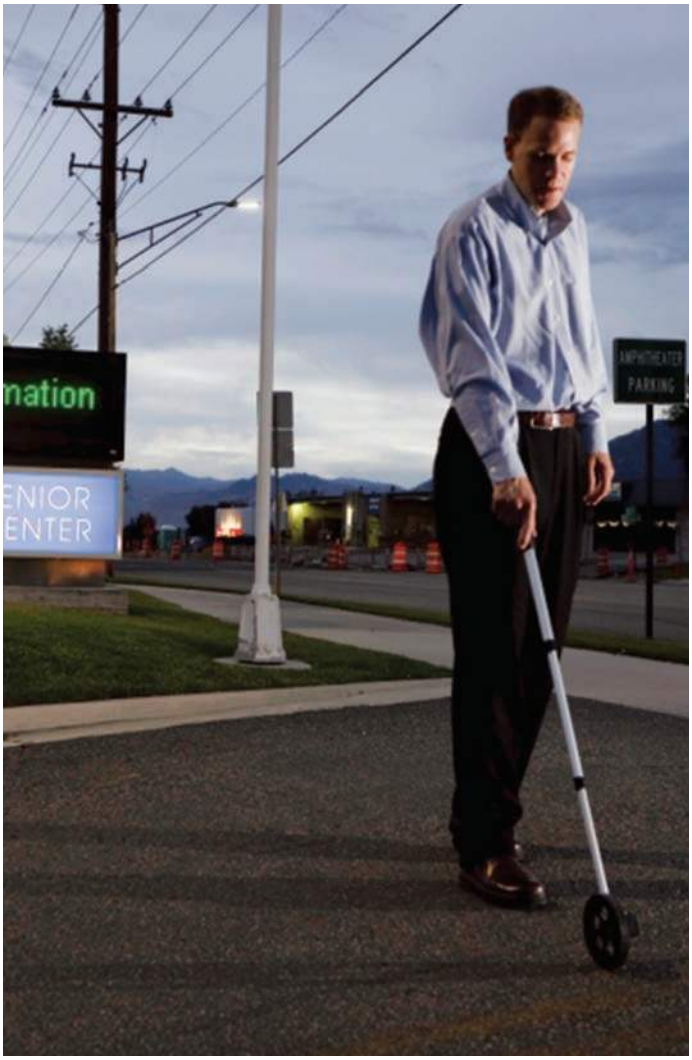
DETERMINE SQUARE FOOTAGE.

Determine the square footage of the face of the electronic message sign (EMC) by multiplying the height and width of the EMC. This information may be available in a permit application, or can be determined by physically measuring the height and width of the EMC. Do not include the sign face square footage attributable to any additional static signs associated with the EMC (if applicable).

STEP 3

DETERMINE THE MEASUREMENT DISTANCE.

Using the total square footage found in Step 2, look up the measurement distance in the table provided in the Recommended Legislative Language on page 8, to determine the distance to measure the brightness of the EMC. The distance should be measured perpendicular to the EMC sign face. The use of a measuring wheel, laser finder or a smartphone app are the most convenient ways to measure the distance.



STEP 4

PREPARE THE DISPLAY FOR TESTING.

Ensure that the EMC is programmed to alternate between a solid white (or in the case of a monochrome display – the solid color of the display) message and a blank message. The community may require that the sign owner cooperate with testing by programming the EMC for testing upon written notice.

STEP 5

USE AN ILLUMINANCE METER TO MEASURE THE BRIGHTNESS OF THE EMC.

Mount the sensor of your illuminance meter to a tripod and orient the sensor directly towards the face of the EMC at the measurement distance determined in Step 2.

Ensure that the illuminance meter is set to measure footcandles up to two decimal places. As the display alternates between a solid white message and an "off" message, note the range of values on the illuminance meter. If the difference between the readings is less than 0.3 footcandles, then the brightness of the display is in compliance. If not, the display will need to be adjusted to a lower brightness level using the manufacturer's recommended procedures.

STEP 6

ENSURE THAT THE DISPLAY CAN ADJUST TO DIFFERENT AMBIENT CONDITIONS.

Inspect the sign to ensure that it incorporates a photocell or other technology to ensure that the display can adjust according to ambient lighting conditions.

As the display alternates between a solid white message and an "off" message, note the range of values on the illuminance meter. If the difference between the readings is less than 0.3 footcandles, then the brightness of the display is in compliance.

HOW TO MEASURE THE NIGHT-TIME BRIGHTNESS OF AN EMC—WITHOUT CONTROL OF THE SIGN

(Note: This method requires two individuals, but does not require operational control of the EMC.)

There will be instances where the EMC illumination needs to be evaluated to ensure that it does not exceed the brightness levels established in the municipal sign ordinance. If the municipality is unable to obtain access to the sign controls or attempting to take the measurement after business hours, this method should be followed.

Unlike the six-step process described previously, this process measures the difference in brightness between the sign in operation and when the sign is completely blocked from the illuminance meter. This procedure is extremely simple and requires only an illuminance meter and a piece of painted cardboard cut to the proper size.

STEP 1

OBTAIN AN ILLUMINANCE METER.
(See previous Step 1)

STEP 2

DETERMINE SQUARE FOOTAGE.
(See previous Step 2)

STEP 3

DETERMINE THE MEASUREMENT DISTANCE.
(See previous Step 3 or use $\sqrt{(\text{Area of Sign in Sq. Ft. x } 100)}$)

STEP 4

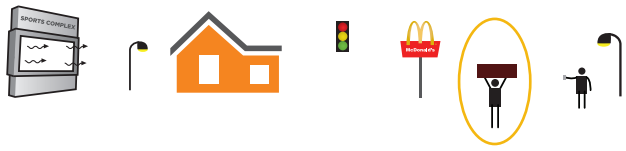
POSITION THE TESTERS.

Based on the size of the digital display, the person conducting the test should position themselves as close to directly in front of the digital display as practical, at the appropriate distance (calculated in Step 3).

A helper should position themselves about 7 ft. to 10 ft. in front of the light meter and hold up an opaque, black sheet of material that is roughly 12 in. high by 40 in. wide. (Regular cardboard painted matte black works well for this.) The sheet should be positioned so it blocks all light from the EMC, but still allows the remaining ambient light to register on the illuminance meter.

EMC Area	Measurement Distance
24 ft²	49 ft
32 ft²	57 ft
50 ft²	71 ft
100 ft²	100 ft

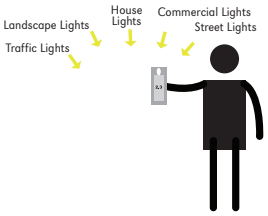
This helper should use a cardboard sheet to block the EMC light from the footcandle meter. This will establish the baseline footcandle reading.



After the cardboard block is held in place, a reading should be taken for the ambient light.

In this example, various light sources are impacting the photocell measuring 2.3 footcandles of ambient light.

This is the baseline for the measurement. Write it down.



STEP 5

USE AN ILLUMINANCE METER.

The illuminance meter should be held at a height of about 5 ft. (which is approximately eye level) and aimed directly at the EMC. The illuminance meter will account for surrounding sources of light or the absence thereof.

In this case our ambient light reading was 2.3 fc. The new light reading with the LED displaying a full white frame cannot read above 2.6 fc or 2.3 (ambient) + 0.3 (threshold). If a full white frame cannot be arranged, watch the meter to see if any ad exceeds 2.6 fc.

At this point, readings should be taken from the illuminance meter to establish a baseline illumination level. (ISA recommends that the illuminance meter is capable of levels to 2 decimal places 0.00).

Once the baseline level is established, add 0.3 footcandles to the baseline level to calculate the max brightness limit. (For example: Baseline reading is 3.15 footcandles. The max brightness level is 3.45 footcandles.)

STEP 6

DETERMINE THE BRIGHTNESS LEVEL.

Remove the opaque sheet from blocking the EMC. Watch the footcandle meter for 3 to 5 minutes to see if the max brightness level is exceeded by any of the images on the sign. If the readings do not exceed the max brightness levels, then the EMC illumination is in compliance.

If any of readings consistently exceed the max brightness level, the lighting level is not in compliance. In this scenario, the municipality will need to inform the sign owner of noncompliance and take appropriate steps to ensure that the EMC be adjusted to a lower brightness level using the manufacturer's recommended procedures.

If any of readings consistently exceed the max brightness level, the lighting level is not in compliance.

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DIXIE SUNBOWL RENTAL OPTIONS

Contacted Locations

01 Days of 47 Stadium

02 Spanish Fork Fairgrounds

03 Oakley City Recreational Complex

04 Juab County Fairgrounds

COMPARISONS

DAYS OF 47 STADIUM

$12,000 per day

- Extra revenue from paid parking and a percentage of concessions
- Alcohol sales share profit with a contractor who handles event permits and purchasing.

NEPHI CITY

- $3000/day + 10 % Maintenance fee.

OAKLEY CITY

- $2,500 per day. The rodeo and most other events are organized by the City of Oakley, and the City retain all ticket sale revenue.

SPANISH FORK FAIRGROUNDS

- $1000/ day + 10% of Ticket sales.

Recommended Fee Structure

- $3,000 per day rental fee for use of the Dixie Sunbowl
- Additional 10% fee on all ticket sales

Concessions Model

- Issue an RFP to select a concessionaire to operate food and beverage services
- Structure agreement so the City receives a percentage of all concession sales