

# CONSIDERATIONS THEN AND NOW



#### Developments in the PM2.5 arena shift the thought process

- December 2020: PM2.5 NAAQS (12.0 μg/m<sup>3</sup>)
  - Review of the standard initiated in 2014
  - Most chartered CASAC replaced, PM review panel disbanded
  - Existing standard retained, Clark County was in **attainment**

#### June 2021: Announcement of Reconsideration of Previous NAAQS Decision

- New Administration January 20 Executive Order to review past action
- Clark County anticipates a strengthening of the standard



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#### April 2023: EPA Approves Teledyne Network Data Alignment

- Early adopters (circa 2017) report data was bias high compared to the FRM
- Modification of FEM designation to allow adjustment of firmware
- Inconsequential difference in DES' data anticipated (DES uses T640x)
- March 2024: Final Rulemaking PM2.5 NAAQS (9.0 μg/m3)
  - Included calibration of Teledyne instruments to retroactively update data
  - Clark County was in **nonattainment** (2023 DV 9.6 μg/m3)

#### May 2024: Teledyne Instrument data adjusted

- Clark County was back in **attainment** 2022-24 DV (8.7 μg/m3)
- Still close to the standard depends on final designations



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- July 2024: Residential Wood Burning
  - PM2.5 fingerprinting study reveals biomass emissions (fireplaces)
- Fall 2024: Holiday Exceedances
  - Clark County exceeded the daily PM2.5 standard on two consecutive Christmas Days (2022 and 2023), and Christmas 2020
- March 2025: Announcement that "revisiting" the previous decision
  - New Administration
  - Reverting to the previous standard is widely anticipated (12.0 µg/m3)





- 1. DES conducted a winter PM2.5 study in the Las Vegas Valley
- 2. Four monitoring sites were included:
  - Jerome Mack and Sunrise Acres traditionally high during nocturnal temp inversions
  - **Green Valley** and **Walnut Recreation** were selected to expand the spatial coverage
- 3. Analytical results were evaluated and used to determine fingerprints and sources





- 1. Sampling Method
  - E-SEQ- FRM Sequential Reference Method for Particulate Samplers
  - 47 mm Teflon®-membrane filters used at all four sites
  - 24-hour samples collected on select winter days
- 2. Analytical Method
  - Samples analyzed for:
    - Trace elements
    - Black carbon
    - Ultraviolet-absorbing particulate matter
    - Levoglucosan
    - Common cations and anions
  - Gravimetric analysis
  - Energy Dispersive X-Ray Fluorescence analysis
  - Carbon analysis





Analyte	Composition	Sources	Jerome Mack BC (µg)	
Black Carbon	Paracrystalline carbon/soot	Fossil fuel combustion and biomass burning	16% UVPM (μg) 9%	
Ultraviolet- absorbing particulate matter	Brown and organic carbons	Biomass burning, fossil fuel combustion, secondary organic aerosol reactions	Unknown (µg) 46%	Levoglucosan (µg) 2%
Levoglucosan	$C_{6}H_{10}O_{5}$	Solid Fuel/Biomass Burning	Inorganic lo	ns
Inorganic lons	K <sup>+</sup> , Cl <sup>-</sup> , Mg <sup>2+</sup> , NO <sub>3</sub> <sup>-</sup> , SO <sub>4</sub> <sup>2-</sup> , NH <sub>4</sub> <sup>+</sup>	Combustion and industrial processes	(µg) Mineral Dust (µg)	
Mineral Dust	$AI_2O_3$ , SiO <sub>2</sub> , CaO, Mn, Fe <sub>2</sub> O <sub>3</sub> , PO <sub>4</sub>	Wind and human disturbances of desert environment	13%	





![](_page_8_Picture_1.jpeg)

![](_page_8_Figure_3.jpeg)

![](_page_9_Picture_1.jpeg)

![](_page_9_Figure_3.jpeg)

# **STUDYING PM**<sub>2.5</sub> RESIDENTIAL WOOD BURNING

![](_page_10_Picture_1.jpeg)

## **Identifying the Uses of Fireplaces**

- Fireplace and Construction Emissions Study (F.A.C.E.S)
  - Conducting study to understand fireplace usage in Las Vegas Valley
  - Contracting with consultant in 2025
- Programmatic
  - Enhanced webpage development
  - Enhanced campaigning/outreach

#### Backburner

- Incentive program (conversion/replacement)
- No-Burn-Days

![](_page_10_Figure_12.jpeg)

# CHANGING BEHAVIOR HOLIDAY FIREPLACE EMISSIONS

![](_page_11_Picture_1.jpeg)

## Put Out the Fire Campaign 🔶

#### Goals

- Avoid a third consecutive Christmas Day PM2.5 exceedance (24hr)
- Generally, avoid holiday season PM2.5 exceedances (24hr)
- Education about effects on air quality and how to burn wood correctly
- Light scented candle instead and "burn" a yule log on streaming service (YouTube, Netflix, etc.)

#### Approach

- Partnered with the American Lung Association Nevada
- Launched social media campaign, asking to pledge and enter to win electric fireplace
- Tabled at public events, giving away scented campaign candles
- Pitched the story to local media

![](_page_11_Picture_13.jpeg)

# CHANGING BEHAVIOR HOLIDAY FIREPLACE EMISSIONS

![](_page_12_Picture_1.jpeg)

## Put Out the Fire Campaign 🔶

#### Campaign Results

- More than 2,100 people viewed our Put Out The Fire webpage
- Social media
  - Reach: 63,746
  - Engagements: 1,761 (Facebook/Instagram/Twitter)
- Gave away about 250 candles
- 127 people took our survey
- 2 lucky winners of electric fireplaces
- **NO EXCEEDANCE CHRISTMAS 2024!**

![](_page_12_Figure_12.jpeg)

# Burn Wise, Clark County!

If you're burning wood at home, indoors or outdoors, here are a few simple tips to help you to burn efficiently and with fewer emissions. It's good for your health and the air we share!

![](_page_12_Picture_15.jpeg)

#### Safe, Wood-burning Practices

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What NOT to Burn

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Additional Resources

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