City of Madison: Greening the Fleet

Thursday, May 23, 2019
Alliant Energy Center
WHY GREEN THE FLEET?

Hurricane Florence Has Gone, but Challenges for the Carolinas Have Just Begun

Records broken as heat wave bakes Southern California

(Reuters) - A dangerous heat wave will continue to bake Southern California on Saturday, hitting temperatures well above 110 degrees across the region and setting all-time records in several places.

Darryl Witherspoon of the South Carolina National Guard in Nichols, S.C. Flooding threats have not abated in South Carolina’s low-lying coastal plain. Tamir Kalifa for The New York Times
Scottish records its highest temperature on record

Season's hottest day: Delhi sweats at 46°C

Temperatures touched 46 degrees Celsius in Delhi on Tuesday, continuing the spell of intense heat wave that has gripped parts of the country. "Palam at 46.0 and Safdarjung a 44.0 degrees Celsius are maximum temperatures of May 22," the weather office said on Tuesday.

"Season's highest, but such high temperatures are within ranges for both locations when one considers such heat occurrences in Delhi for second half of May," the meteorological watch office (MWO) at India Meteorological Department (IMD) said in a statement.

NASA created rainfall analysis for super Typhoon Mangkhut

The NASA analysis showed IMERG rainfall estimates over the western Pacific Ocean during the period from Sept. 11-17, 2018. Rainfall totals above 200 mm (7.87 inches) were often indicated along Mangkhut's path. The highest rainfall occurred near the typhoon's eye and its northern flank.
Wisconsin’s Floods Are Catastrophic—and Only Getting Worse

Record Rain in Madison is What Climate Change Looks Like — Especially in Midwest
**THE HUMAN AND $$$ TOLLS**

- Hurricane Katrina (2005): $125B / 1833 dead
- Hurricane Sandy (2012): $69B / 233 dead
- Hurricane Harvey (2017): $125B / 107 dead
- Hurricane Maria (2017): $92B / 2975 dead
- Hurricane Florence (2018): $50B / 53 dead
- Camp Fires (2018): $ (?) / 83 + dead
- Wisconsin Floods (2018): $300M / 2 + dead

- Transportation: 28%
- Industry: 22%
- Electricity: 28%
- Commercial & Residential: 11%
- Agriculture: 9%
UPSTREAM COSTS OF FOSSIL FUEL

AVIATION BASES:

Oman:

Muscat Johann Air Base

Aviation Base, Oman: Located southeast of the capital, Muscat. Also used by the US as an emergency storage depot.

Tao Air Base, Saudi Arabia:

A military and air base recently expanded by Saudi Arabia. The new Saudi Air Force base has most of its F-15 fighter jets at this facility.

Al Murnah Air Base, Oman:

Operated by the Oman Air Force.

Beit al-Jinn Air Base, Oman:

Operated by the Oman Air Force.

Thumrait Air Base, Oman:

Operated by the Oman Air Force.

AVIATION BASES:

Saudi Arabia:

Abu Ali Air Base, Bahrain:

Located in Bahrain, this base is used by the Royal Bahrain Air Force. It was established in the United States during the first Gulf War.

Al Daf Air Base, Qatar:

This former U.S. Navy Command and Control base is now used by the Qatar Emiri Air Force. It boasts the Qatar Air Force's largest airfield.

Al-Nahar Air Base, Kuwait:

Operated by Kuwait's Air Force. Also used by the US Air Force.

Al Shafrah Air Base, UAE:

Operated by the UAE Air Force. Also used by the US Air Force.

King Khalid Military City, Saudi Arabia:

One of the most important Saudi military air bases due to its strategic location.

Exxon Village Air Base, Saudi Arabia:

Located north of the capital, Riyadh. It is used by the US for logistics support for the northern front line by the Saudis.

Tail Air Base, Saudi Arabia:

Operated by the Saudi Royal Air Force.

Jeddah Air Base, Saudi Arabia:

Located in Jeddah, this base is used by the Saudi Royal Air Force. It also houses a number of inshore hunter-aircraft.

JUSTIN A. MATHER
In April 2018, Fleet Service introduced biodiesel blends of B5 (5% biodiesel) and then B11 (11% biodiesel) at fuel locations without any operational impact.

We anticipate about 1 million lbs. of CO2 reduction over 1 year.

Biodiesel prices fluctuate like many markets, but throughout 2018, B11 has cost less than regular diesel.

9/14/18

Diesel Spot: $2.84
B11 Spot: $2.71
WHAT IS BIODIESEL?

- Renewable energy source
- Largely soybean, agricultural waste and waste oil based
- Grown and processed in Midwestern states—supporting local economy including WI
- Reduces emissions and carbon footprint
- Reduces dependence on foreign oil and gas
ELECTRIC VEHICLES WORK

- In 2018, Madison purchased its first 3 electric cars ever: Chevy Bolts
- 238 mile range
- MG&E grant match provided electric charging stations
- Low maintenance
- Fuel savings
- Zero emissions
In 2018, we were awarded by the Wisconsin State Office of Energy Innovation (OEI) as part of its first annual grant program.

The application laid out a detailed plan for the offset of electric vehicle (EV) purchases that would make City of Madison the largest EV fleet in Wisconsin.
HYBRID CARS

- In 2018, 6 hybrid Ford Fusions were purchased for Madison Police Department detectives. More are on the way for multiple agencies.
- Fuel efficiency went from 18 MPG to 43 MPG per car
- We are planning to purchase the first hybrid squad cars in 2019.
HYBRID TRUCKS

- We are planning to buy hybrid work trucks in 2019 for agencies such as Parks and Traffic Engineering.
In 2018, Madison purchased its first two ambulances with anti-idle technology in a Fire Department-Fleet partnership.

This allows ambulances to continue working off an electrical system while the engine shuts off.

Anti-idling technology is better for the environment by reducing air pollution and noise pollution. Engine maintenance also improves.

Fuel savings are also achieved of up to 40%.
IMPLEMENTING COMPRESSED NATURAL GAS (CNG) VEHICLES

- Fleet is currently working with Streets to spec out the first group of heavy duty CNG trucks for 2019
- City of Madison has met with Dane County officials to discuss fueling at the renewable CNG station- landfill methane
PROPANE VEHICLES

- Mostly off-road equipment such as forklifts and floor scrubbers
- Madison currently has 12 units and we are looking for opportunities to expand
- Propane has lower emissions. Propane vehicles cost more but the fuel is less expensive
In Fall 2018, Public Works agencies will be outfitted with GPS tracking devices that will provide detailed reporting for fuel savings:

1) Routing
2) Idling
3) Speeding
4) Hard Breaking
5) Hard Acceleration
Featuring: Solar panels, solar heating wall, CNG repair bays, electric vehicle chargers, natural lighting

Goal of LEED Silver certification
DEEP REVIEW OF AUTOMOTIVE FLUIDS AND CONSUMABLES
WORKING TOGETHER WITH AREA TRANSPORTATION PROFESSIONALS
In 2018, Fleet initiated conversations with Mayor’s Office, customer agencies, Common Council, and other stakeholders to create new legislation to codify new City vehicle purchases into law.

Keeping an eye on sustainability, practicality, and also cost:

Ideas:

- Mandating biodiesel or CNG for all diesel vehicles and equipment by 2020.
- Fleet must approve all exceptions, if any, based on critical operational need waiver.
WHO IS GOING TO LEAD?

Denmark embraces electric car revolution with petrol and diesel ban plan

COPENHAGEN (Reuters) - Denmark has proposed a ban on the sale of new petrol and diesel cars from 2030 and hybrid from 2035, joining international efforts to promote electric-only vehicles to reduce air pollution and combat climate change.

India to sell only electric cars by 2030

While the United States is walking away from the historic Paris Climate Agreement, India is making a bold vow to start selling only electric cars by 2030.

China's New Electric Car Rules Are Amazingly Aggressive

This is how you really get an industry to change its ways. Bloomberg reports that China's government has announced that any automaker producing or importing more than 30,000 cars in China must ensure 10 percent of them are all-electric, plug-in hybrid, or hydrogen-powered by 2019. That number will rise to 12 percent in 2020.
407 US CITY MAYORS AGREE TO TAKE ACTION ON CLIMATE CHANGE: JOINT EV RFI
THE FUTURE