



The Madeira & Indian Hill Fire Company

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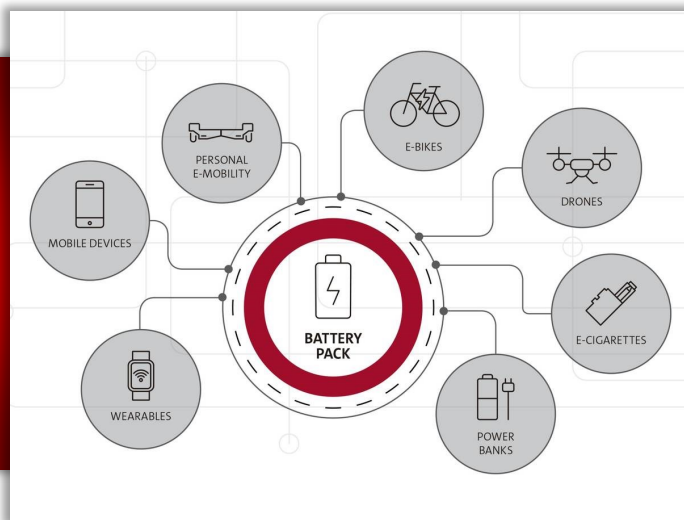
NO 2

Lithium Battery Safety

Lithium batteries are a big part of our daily lives. We use them in all shapes and sizes, from cell phones to mobility devices, vehicles and even power grid battery systems. In the last five years, the fire service has dealt with an alarming increase in the number of fires that have originated from a lithium battery device. The issue is not entirely with the lithium battery or the safety of the device, it is due to the improper care and maintenance of the battery system. Damage to the battery casing or the battery itself causes the batteries to fail quickly and violently, resulting in rapid fire growth with incredible speed and intensity.

From the limited research we have available in the fire service, FDNY is leading the way to prepare fire departments to mitigate the hazards of lithium battery fires. Their experience since 2019 has seen exponential growth in lithium battery fires including multiple fatalities associated with those fires. Their research is now being expanded to other agencies including the Fire Research Laboratories, NIST and U.L.

In our fire district, we have seen small fires that were controlled quickly, but in our neighboring cities, we have seen larger loss fires resulting in significant fire loss. It is our mission to spread awareness and to give people knowledge so that we may prevent lithium battery fires from occurring.



- Don't use damaged chargers or cords.
- Don't use damaged batteries – damaged batteries lead to thermal runaway and sudden ignition.
- Don't keep batteries on a charge or charger, charge for the recommended time and disconnect battery from cord or charger.
- Don't place charging batteries or devices on furniture, such as couches or bedding.
- Don't allow charging devices direct access to sunlight.
- Only replace lithium batteries recommended by the manufacturer – cheap batteries are being made with sub-standard manufacturing processes that lead to failure.
- Avoid charging larger batteries from mobility devices in sleeping areas or areas of escape. Charging systems are best kept in the garage.

Examples of mobility devices include scooters, one-wheels, e-bikes, and hover boards.

The Dangers of Vaping

Cigarette use in teens was once widespread a few decades ago, but fortunately rates of traditional combustible cigarette use are on the decline thanks to efforts by advocacy groups and lawmakers [1]. With this, a significant rise in e-cigarette or “vape” use by adolescents has been observed over the last decade [2]. Initially marketed as a safer alternative to traditional cigarettes, e-cigarettes can actually be quite dangerous for your health. One survey performed in 2019 showed that nearly $\frac{3}{4}$ of teens didn’t know that JUUL pods (the most common e-cigarette brand in the US) even contained nicotine at all! [3] Teenagers are



uniquely affected by nicotine and at risk for progressing to using traditional combustible cigarettes and marijuana [2]. Advertising for e-cigarettes has been heavily aimed at adolescents; from brightly colored packaging, to social media ads, even flavors such as gummy bear or frosted sugar [1].

At times, it falls to parents, teachers, and community leaders to educate teens on how dangerous and addictive e-cigarettes are.

While e-cigarettes and vapes do not contain tar or carbon monoxide, they do contain several dangerous and carcinogenic chemicals including formaldehyde, propylene glycol, and hydrocarbons [4]. Additionally, the amount of nicotine is often higher than combustible cigarettes [1]. Vaping results in the inhalation of the nicotine, where it is absorbed quite rapidly through the lung tissue, directly into the bloodstream. This

stimulates the central nervous system, increases the heart rate and respiratory rate, and can lead to increased risk of death in those with underlying cardiac disease [1]. Short term effects can be mild such as sore throat, mouth and tongue irritation, cough, and nausea. Longer term, teens can develop permanent respiratory symptoms and decreased pulmonary immune function [3]. The heating coil in vape pens can release chemicals such as lead, chromium, nickel and manganese, all of which can cause permanent lung damage [4]. There have been reports of “popcorn lung” or bronchiolitis obliterans in teens, which is serious and irreversible scarring of the lung tissue from certain chemicals in vape pens. [5]. A new illness called EVALI (e-cigarette/vaping use associated lung injury) was first identified in 2019 and is thought to be due to the vitamin E acetate in vape pens. This can cause fever, chills, and respiratory distress. Almost all patients require oxygen, 96% of patients require hospitalization and in severe cases, EVALI can lead to death [6].

Overall, vaping has unfortunately become more “acceptable” today than combustible cigarette use, but is just as deadly. Nicotine in earlier stages of adolescence can lead to more severe nicotine use later in life, higher risk of progression to chronic smoking, and increased risk of mood disorders [7]. It can even result in a visit to your local emergency room for acute or chronic lung issues. Talk to your kids about the dangers of vaping and don’t underestimate the risks of peer pressure when it comes to nicotine use. You can always ask your pediatrician for resources or visit the American Lung Association website.

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[1] http://pediatricnursing.net/interestarticles/14512_Selekman.pdf

[2] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7023954/>

[3] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7183384/>

[4] <https://www.fda.gov/tobacco-products/public-health-education/think-e-cigs-cant-harm-teens-health>

[5] https://www.cdc.gov/tobacco/basic_information/e-cigarettes/Quick-Facts-on-the-Risks-of-E-cigarettes-for-Kids-Teens-and-Young-Adults.html

[6] <https://www.lung.org/lung-health-diseases/lung-disease-lookup/evali>

[7] <https://e-cigarettes.surgeongeneral.gov/knowtherisks.html>

After twenty months of waiting, the MIHJFD has taken delivery of the engine we ordered in November 2021. The 2023 E-One Cyclone Engine will replace the 2002 Boise Engine. The new apparatus will be placed into service at the Indian Hill Station, Station 64, after all equipment has been installed, mounted and all of our apparatus operators have been trained. The engine that is currently at Station 64 will move to the Madeira Station and the 2011 Pierce 65' ladder truck will be placed into reserve status.

The new engine features a larger tank, bigger power plant and more hose than we currently deploy. The purpose of the improvements is simple, to provide water in the quickest, most efficient way possible for our district. The engine was purposefully built for hilly terrain, tight turns, narrow driveways, and gated driveways with its short wheelbase and high torque Cummins engine. We opted for a shortened the front bumper which will make it easier to access many of our residential properties.



Fire trucks are custom made vehicles. We chose E-One because of the quality of the build and the service they provide via a local dealer and maintenance facility located in Erlanger, next to CVG. Other features of the truck include a floor dry hopper, large cab with SCBA seating for five firefighters and automated ladder rack. The pump panel has flow and pressure gauges with turn wheel valves.

The truck will have most of the hose stored and deployed in the rear of the truck with only one cross lay and a booster line for small fires.

The truck doesn't have a generator, because all of the scene and emergency lighting is low voltage LED and all of the tools will be battery powered. Chargers will be located in the compartments and the tools will be charged when the engine is running or plugged in when at the station.



We prepaid for the apparatus when we signed the contract back in November 2021. This decision saved the JFD almost \$30,000 but more importantly, that same apparatus would cost our taxpayers about 40% more due to the fallout from COVID-19 including personnel shortages, price increases, supply issues and more. We paid approximately \$670,000 in 2021 and that same truck would cost around \$950,000 today.

The JFD is excited to put the new rig into service and we will announce on our website and social media when that day will be. We plan on having a "Push-In Ceremony" where members and guests will push the rig into the bay prior to being placed into service. The ceremony dates back to the days of horse drawn pumpers, where firefighters unhooked the horses, then pushed the steam pumper back into quarters.



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Part-time Personnel



Madeira & Indian Hill Joint Fire District is staffed with both career and part time personnel. All of our career staff are firefighter / paramedics and supplement that staff with part-time firefighter / EMT's and Paramedics. We have two types of part-time positions, regularly scheduled and PRN. We have six positions that are reserved for part-time firefighters who work twenty-four hours every sixth day.

When we have positions open, over the last two years we have participated in Interview Day at Scarlet Oaks and hired personnel directly from the graduating class. Although these firefighters

have little to no experience, we have had great success teaching them the trade and how to serve in our joint fire district. In August, we hired three personnel from the last Interview Day. We welcome Mitch Morgan, Ronald Kincaid, and Terry Lovelace to the team. Each of the three new employees have been assigned a unit day and have begun their orientation and probation period.

