

## ECONOMIC FINDING

# Powering Work from Home

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From April to July 2020, American households spent nearly \$6 billion in excess residential electricity consumption. Electricity bills were over \$20/month higher on average for utilities serving one-fifth of US households.

To reduce the risk of exposure to the COVID-19 virus, roughly one-third of the American labor force has been working from home. Household expenditures have also changed dramatically, reflecting both the loss of income and consumption opportunities, and a shift toward household production. Additional time and consumption at home requires significant increases in electricity

consumption. This represents an additional and essential expense at a time that many households are also experiencing severe economic hardship.

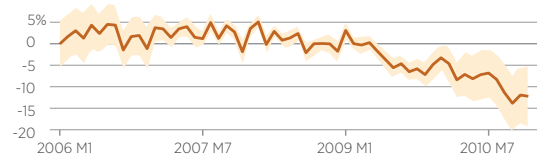
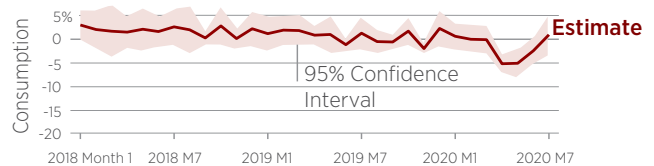
Using data that provides hourly residential electricity consumption in Texas, along with another dataset that reports monthly consumption of electricity by customer class (residential, commercial, and industrial) for most U.S. utilities, the author found that the increase in residential consumption corresponds with those workers able to work from home. Also, while rising unemployment is strongly associated with commercial

**Figure 1: Electricity Consumption During Crises by Customer Class**

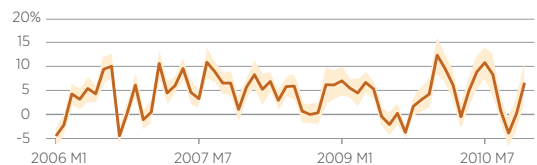
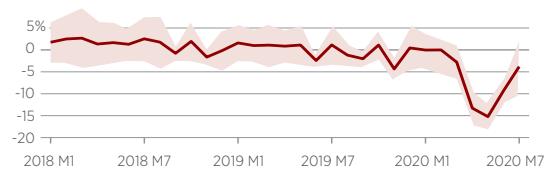
### 2008 Financial Crisis (Total)



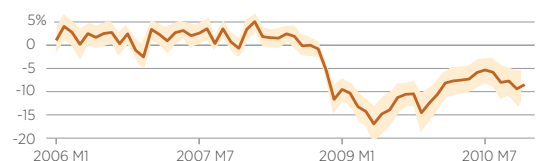
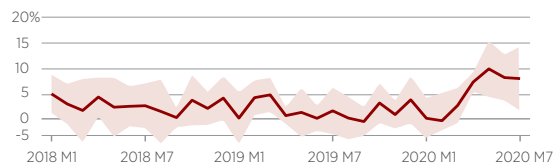
### COVID-19 Pandemic (Total)



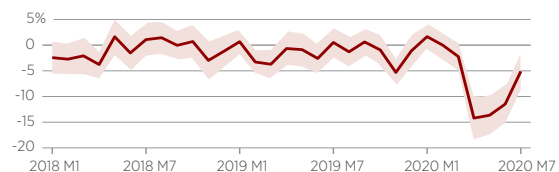
Commercial



Residential



Industrial



Notes: Estimates are based on specification (5) of Table (1), which include utility-month of year fixed effects and utility-specific meteorological controls.

and industrial electricity declines, it is weakly associated with residential increases. Non-essential business closures do not have statistically significant impacts on usage beyond the direct potential employment effects.

Further, the author finds that the increase in residential consumption is not common in economic downturns; for example, it did not occur during the Great Recession. From April to July 2020, American households spent nearly \$6 billion in excess residential electricity consumption. Electricity bills were over \$20/month higher on average for utilities serving one-fifth of US households. This increased

expenditure reduces the net benefits of working from home associated with less commuting and improved environmental quality. As industrial and commercial activity recovers, working from home has the potential to increase emissions from the power sector on net. In the same way that dense cities are more energy efficient than suburbs, it requires more energy to heat and cool entire homes than the offices and schools.