



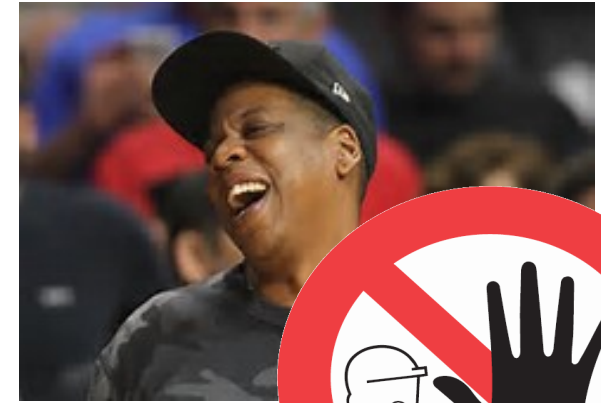
# Impact of the Covid-19 Pandemic on Utility Bill Collections

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# Who is Jay Z?



- I teach in the Economics and Statistics departments at the University of Texas.
- Cofounded Frontier Associates in 1999, which was acquired by the Gas Technology Institute three years ago.
- Worked at the Texas PUC for over 7 years – most of that time as the Director of Electric Utility Regulation.
- Authored or co-authored about 100 papers – most are in peer-reviewed academic journals.
- Testified in over 40 regulatory proceedings in six states.



# Outline

- Background
- Previous Studies
- Suggested Steps in Developing an Estimate
- An Example Using National Data and Previously-Estimated Relationships
- Conclusions

# Background

- The typical accounting approaches for estimating uncollectibles as a percent of recent historical averages of sales or numbers of meters won't work during a period of abrupt economic decline.
  - For ratemaking purposes, a post-test-year adjustment may be needed in jurisdictions that determine rates based on historical data.
  - In jurisdictions that determine rates based on projections of costs in a projected rate year, recent trends won't provide much guidance.
- Bills in arrears (past due) are likely to climb.
- Disconnection for non-payment activity is being suppressed by moratoria on shut-offs but will likely spike when the moratoria are lifted.

# Previous Studies

- There is a lot of uncertainty over how an economic shock as we are experiencing today might impact collections of bills by utilities from consumers.
- Nonetheless, studies of utility bill collections and disconnects around the time of the Great Recession (a little over 10 years ago) may provide some insights.

# Previous Studies

## The Great Recession, Public Transfers, and Material Hardship

Natasha V. Pilkauskas  
*Columbia University*

Janet M. Currie  
*Princeton University*

Irwin Garfinkel  
*Columbia University*

Economic downturns lead to lost income and increased poverty. Although high unemployment almost certainly also increases material hardship and government transfers likely decrease hardship, the first relationship is not yet documented and the second is poorly understood. This study uses data from the Fragile Families and Child Wellbeing Study to examine the associations of unemployment, government transfers, and material hardship. The Fragile Families study collected the latest wave of data during the Great Recession, the worst recession since the Great Depression. The data provide a unique opportunity to examine how high unemployment affects the well-being of low-income families. This study finds that the unemployment rate is associated with increased overall material hardship, difficulty paying bills, having utilities disconnected, and increased usage of welfare, food stamps, unemployment insurance, and Medicaid. If not for food stamps, food hardship during the Great Recession might have increased by twice the amount actually observed.

- This study quantified the relationship between the local unemployment rate and answers to survey questions about difficulties in paying bills and whether utility service had been disconnected in the years before and during the Great Recession.
- The same individuals were interviewed multiple times. This was a panel data set, or longitudinal study.
- Most of the respondents were in an economically-disadvantaged group.



# Previous Study from Columbia/Princeton

- The local unemployment rate was found to be a good determinant of disconnects and bill hardship:
  - “The results suggest that a 1-percentage-point increase in the unemployment rate is associated with a 13 percent increase in the likelihood of experiencing bill hardship and with a 16 percent increase in the probability of having one’s utilities cut off.”



# Previous Studies

## A Review of Residential Customer Disconnection Influences & Trends

California Public Utilities Commission  
Policy & Planning Division

- The CPUC staff quantified the relationship between the local unemployment rate and data on disconnections by the four California IOUs.
- Period of analysis was 2007 to 2017, so the Great Recession period was included.

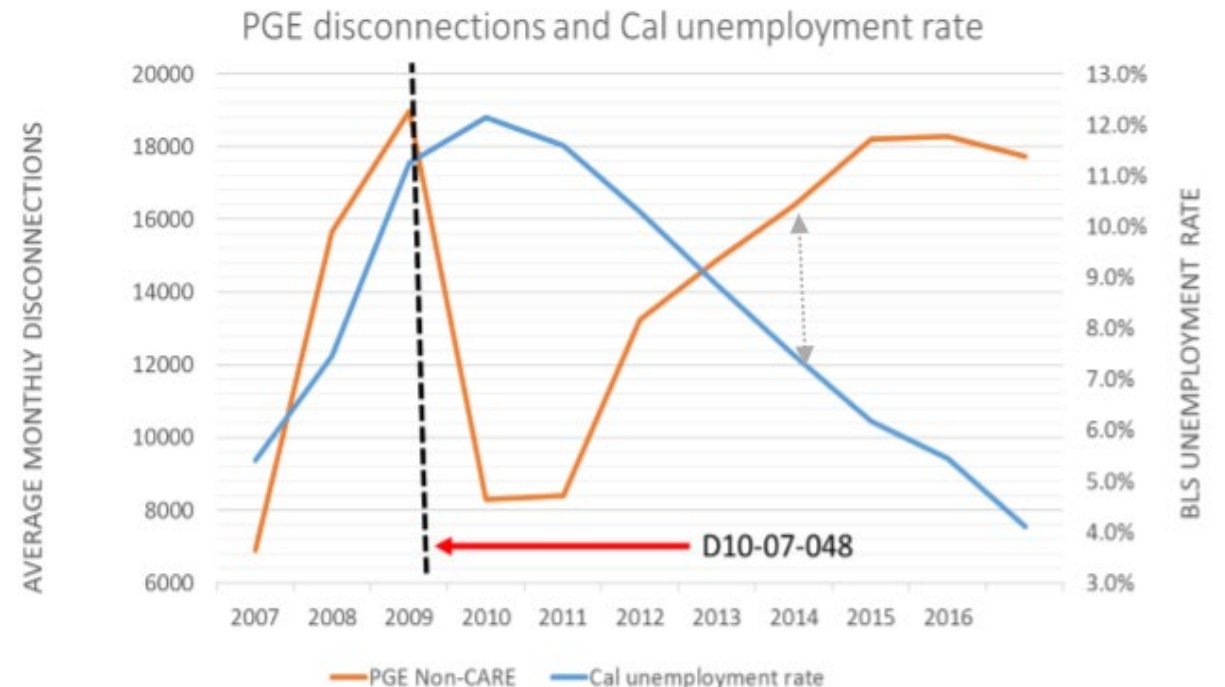
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**POLICY AND PLANNING  
DIVISION**



# Previous Analysis

- Before the CPUC called for a moratorium on disconnects in 2010, disconnects increased as the unemployment rate in the PG&E service area increased.
- Once the moratorium on shut-offs was lifted, disconnects spiked again, even though the unemployment rate had dropped to more-normal levels.
- Many years later, disconnects started to decline.
- Thus, disconnects can respond quickly to a rapid rise in the unemployment rate, and there may be some long-lasting effects after any moratoria on disconnects are lifted.



# Uncollectibles and the Great Recession

From a recent Bank of America investor report:

- We find the average uncollectible debt averaged 0.46% from '90-'14 of the electric operating revenue. We point out that there is a clear increase above this average starting in 2008 when the last financial crisis happened – increasing to 0.57% of uncollectible debt to revenue (which is 23% higher than the average). The next two years were ~35% higher than the 0.46% average at 0.62% of uncollectible debt to revenue. In 2014 we saw the percent trend downwards.

# How a Utility Might Want to Approach this Problem for Their Service Area

- Look at historical relations between bills overdue, disconnects, and determinants of billing problems, such as
  - The local unemployment rate
  - Regulatory policies
  - The weather and size of bills
  - Numbers of customers
  - Prepay programs
- While there is no precedent for the situation that we are in today, understanding historical relationships (especially those during the Great Recession) can nonetheless provide a starting point.

# How a Utility Might Want to Approach this Problem for Their Service Area

- From the utility's billing and accounting records, collect:
  - Weekly or monthly data
  - For various customer classes
  - For a period of at least 15 years (so that the Great Recession is included)
    - Number of accounts by class
    - Sales by class
    - Number of bills and value of bills past due by 30, 60, 90, 120 (etc.) days
    - Number and value of accounts disconnected for bill non-payment

# How a Utility Might Want to Approach this Problem for Their Service Area

- From the U.S. BLS website:
  - Jobs Report data for the state (if weekly data are available from the utility's records)
    - These data are based on the numbers of people receiving unemployment insurance. An unemployment rate (which tends to be different than the one we usually hear about) is based on the percent of people receiving unemployment insurance relative to the number on payrolls.
    - The Initial Claims number in this weekly report tends to move financial markets.
  - Or, the traditional state-level monthly unemployment rate
    - These data are based on a survey and are released monthly, so that they are not quite as timely

# How a Utility Might Want to Approach this Problem for Their Service Area

- Other possible determinants of bills in arrears and disconnection activity:
  - Whether there was a moratorium on disconnections in effect (due to weather, the economy, or other reasons)
  - Whether the utility informed consumers that it was relaxing its collection policies
  - Weather variables
  - Any changes in disconnection or payment policies over time
  - Prices of electricity (or natural gas)

# Possible Historical Relationships

- The percent of bills that go unpaid after 30, 60, 90, 120 days, etc., as a function of the unemployment rate in the current and past time periods.
- Disconnects as a function of the unemployment rate in the current and previous time periods, disconnect policies, etc.
- Relationships might be estimated on an Excel spreadsheet with Ordinary Least-Squares. Logistic Analysis should also be considered, which would require statistical software.
- The relationship in the Columbia/Princeton and CPUC analyses mentioned earlier might provide a benchmark, but the relationship in a particular utility service area is likely to be unique.
- Getting the lag-structure correct is important. It may take some time for an uptick in the unemployment rate to show up in collections problems.

# Estimating Disconnection Relationships

- Explaining disconnects when there is a moratorium on disconnection for non-payment presents some complications, as suggested by the data in the CPUC report:
  - There may be a certain relationship with the unemployment rate during the period before a moratorium
  - Disconnection activity will be suppressed during the moratorium
  - An acceleration in disconnects may be evident once the moratorium is lifted
  - After some period of time following the end of the economic or weather event, disconnections will decline
- Thus, four different modeling relationship for different time periods should be considered when analyzing historical data for disconnects.



# Making a *Projection* of Bills Past Due, Disconnections, etc.

- Combine the estimated relationships with projections of the Unemployment Rate
- For example, using national data:
  - A 1 percent increase in the Unemployment Rate is associated with a 13% increase in “bill hardship” (consistent with the Columbia/Princeton paper).
  - In my base period of early 2020, an estimate of the national rate of bills over 30 days past due was 12.8% (based on an NRRI study from 2004, adjusted for changes in the unemployment rate since that study was conducted).
  - The Unemployment Rate was 3.7% prior to the Pandemic.
  - My forecast of the overall 2020 unemployment rate is 10%.
  - Therefore, the percent of bills at least over 30 days past due will increase from 12.8% to 23.2%.

# Jobless claims might top 5 million for third straight week, push unemployment to 15%

Published: April 15, 2020 at 4:53 p.m. ET

By Jeffrey Bartash

Coronavirus-related job losses set to top 20 million in a month

THE ECONOMY | MAR. 30, 2020

## Fed Projection: Coronavirus Crisis Could Drive Unemployment to 32 Percent

By Eric Levitz @EricLevitz

### • TheUpshot

## *The Unemployment Rate Is Probably Around 13 Percent*

It's almost certainly at its highest level since the Great Depression. Here's how we estimated it.



		Example Calculation for the U.S.			
Pre-Pandemic Period		In 2020, year as a whole			
		Percent Increases			
<b>Unemployment Rate for the year (%)</b>	3.7 2019 Actual Value at end of year	Input	10 %		
<b>Electric Utility Disconnects (%)</b>	3.91 %, 2004 data adjusted for subsequent Unemployment Rate changes	Output	7.8 %	<b>Using the Columbia/Princeton study relationship</b>	101 %
			8.8 %	<b>Using the CPUC Relationship</b>	125 %
<b>Natural Gas Bill Disconnects (%)</b>	3.09 %, 2004 data adjusted for subsequent Unemployment Rate changes	Output	6.2 %		101 %
<b>Residential Electric Accounts in Arrears (% , at least 30 days over-due)</b>	12.76 %, 2004 data adjusted for subsequent Unemployment Rate changes	Output	23.2 %		82 %
<b>Annual Uncollectible Debt (\$Billion)</b>	1.87	Output	2.3 \$B		23 %
<b>Typical annual uncollectibles</b>	0.46% Bank of America report				
<b>Annual industry revenues</b>	406 \$Billion, EIA				

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# For a 12% Unemployment Rate for 2020

			Example Calculation for the U.S.			
Pre-Pandemic Period			In 2020, year as a whole			
			Percent Increases			
<b>Unemployment Rate for the year (%)</b>	3.7	2019 Actual Value at end of year	Input	12 %		
<b>Electric Utility Disconnects (%)</b>	3.91	%, 2004 data adjusted for subsequent Unemployment Rate changes	Output	9.1 % 9.7 %	Using the Columbia/Princeton study relationship Using the CPUC Relationship	133 % 150 %
<b>Natural Gas Bill Disconnects (%)</b>	3.09	%, 2004 data adjusted for subsequent Unemployment Rate changes	Output	7.2 %		133 %
<b>Residential Electric Accounts in Arrears (% , at least 30 days over-due)</b>	12.76	%, 2004 data adjusted for subsequent Unemployment Rate changes	Output	26.5 %		108 %
<b>Annual Uncollectible Debt (\$Billion)</b>	1.87	Bank of America report	Output	2.4 \$B		30 %

# The Example with National Data

- This is just an example, using a lot of assumptions. I wouldn't bet my paycheck on it.
  - I'm using the Great Recession relationships described earlier, which implies the moratoria on disconnects similar to those during the Financial Crisis.
  - During the present pandemic, the Federal Reserve Bank and the Treasury Dept are taking some extraordinary steps to stabilize the economy.
  - A lot of states have already launched “bill forgiveness” programs for the newly-unemployed.
  - My “base period” data on disconnections and bills in arrears (based on an NRRI study) seem a little high.
  - According to the Urban Institute, 14% of households missed a utility bill during the Great Recession, so my result seems a little high.
- Some of the bigger effects will be felt in 2021 and 2022.
- Developing a calculator for a specific utility based on historical relationships for that utility, with recognition of current policies, is likely to be more accurate and meaningful.

# Conclusions

- Bills in arrears and uncollectibles (FERC Acct. 904) will skyrocket in the coming months.
- Depending upon policy actions, disconnections could increase, once moratoria in disconnections are relaxed.
- For planning and regulatory purposes, getting a handle on the magnitude of these changes is vital.
- An examination of the relationships between billing problems and the unemployment rate during the Great Recession, combined with scenario forecasts for the coming unemployment rates, might provide some insight into what is coming.
- These relationships are likely to be utility-specific, so it may be difficult to construct “generic” models and estimates.