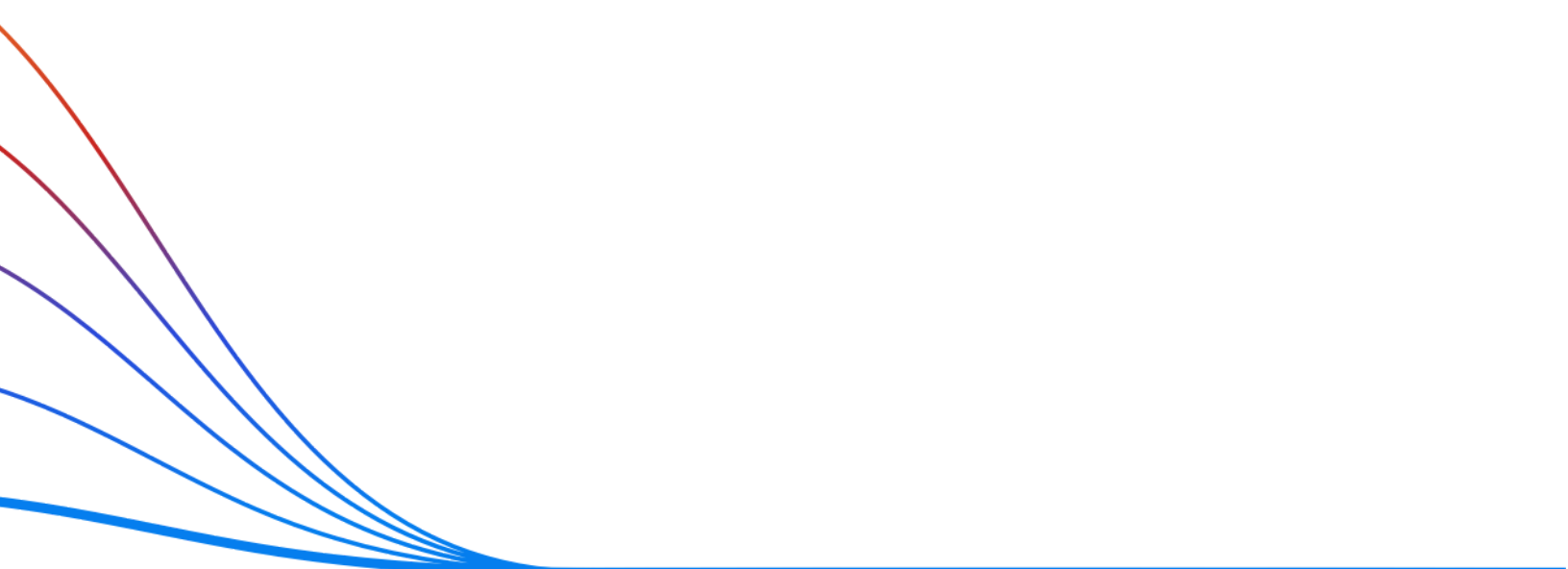




Appendix A: Creation of NAICS Groups and SQL Mapping



Summary

NAICS codes are common in energy and firmographic data and are used to categorize buildings by business type. However, there are literally thousands of individual NAICS codes, which can make it impractical to use them for higher level analyses. Fortunately the NAICS system, which consists of 6-digit codes, is designed to progress from more general to more specific with each digit. Because of this, the first two digits of a NAICS code can be used to assign broader groupings. Below we provide two groupings of NAICS codes (or “NAICS Groups”) that Recurve has generated, along with the SQL code to perform the mapping from the original 6-digit NAICS codes.

The **NAICS Groups 1** are defined by parsing the first two digits of the individual NAICS codes with no further adjustments (with the exception of some slight modification to the naming conventions provided by the [NAICS Association](#)). For many purposes and data sets these groupings will be preferred. However, for the specific case of using NAICS codes to investigate the energy impacts of COVID-19 among the MCE customer base, Recurve has found this mapping to be suboptimal for a few reasons. First, NAICS designations are not broken down by essential vs. non-essential services. This leads to grocery stores being catalogued as Retail Trade along with clothing, jewelry, and book stores among other “non-essential” businesses. Second, the 2-digit NAICS groupings often result in mixed building types, something that can cloud results. For example, consider NAICS Industry Sector 61: Educational Services. Within this sector there are more school district office buildings (611119 Unif School District Ofc) than actual schools. Therefore, to better classify buildings for the COVID-impacts analysis, Recurve organized buildings into **NAICS Groups 2**, which is detailed below.

NAICS Groups 1

Agriculture/Hunting

Mining/Oil/Gas

Utilities

Construction

Manufacturing

Wholesale_Trade

Retail

Transportation/Warehousing

Construction

Finance/Insurance

Real_Estate

Scientific/Technical

Management

Waste_Management

Education
Health_Care/Social
Entertainment
Restaurants/Food_Service
Other_Services
Public_Administration

SQL for NAICS Group 1 Mapping:

```
select
  case
    when naics_2digit = '11' then 'Agriculture/Hunting'
    when naics_2digit = '21' then 'Mining/Oil/Gas'
    when naics_2digit = '22' then 'Utilities'
    when naics_2digit = '23' then 'Construction'
    when naics_2digit between '31' and '33' then 'Manufacturing'
    when naics_2digit = '42' then 'Wholesale_Trade'
    when naics_2digit between '44' and '45' then 'Retail'
    when naics_2digit between '48' and '49' then 'Transportation/Warehousing'
    when naics_2digit = '51' then 'Construction'
    when naics_2digit = '52' then 'Finance/Insurance'
    when naics_2digit = '53' then 'Real_Estate'
    when naics_2digit = '54' then 'Scientific/Technical'
    when naics_2digit = '55' then 'Management'
    when naics_2digit = '56' then 'Waste_Management'
    when naics_2digit = '61' then 'Education'
    when naics_2digit = '62' then 'Health_Care/Social'
    when naics_2digit = '71' then 'Entertainment'
    when naics_2digit = '72' then 'Restaurants/Food_Service'
    when naics_2digit = '81' then 'Other_Services'
    when naics_2digit = '92' then 'Public_Administration'
    else 'Unassigned'
  end as naics_group
from
  (
    with naics_2dig as (
      select
        id,

REGEXP_EXTRACT_All(left_sa_naics_cd_3, r '^[0-9][0-9]') as n_2dig,
      ifnull(left_sa_naics_cd_3, '0') as naics
    from
```

```

    sfe_bayren_targeting_warehouse.dim_project_site_meter d
)
select
  id,
  naics,
  naics_2digit
from
  naics_2dig
  cross join unnest(n_2dig) as naics_2digit
)

```

NAICS Groups 2

Administrative/Civil
 Automotive, Banks
 Beauty
 Churches/Religious
 Construction/Contractors
 Fitness, Gas_Stations
 Grocery/Convenience
 Hotels/Lodging
 Medical_Offices
 Offices
 Real_Estate
 Restaurants/Bars
 Retail
 Schools
 Unassigned
 Warehousing/Postal

SQL for NAICS Group 2 Mapping:

```

select
  case
    when naics_ch in ('813312', '813410', '813910', '813930', '813990', '921190') then
      'Administrative/Civil'
    when naics_ch in ('423120', '441100', '441110', '441120', '441228', '441310', '441320', '488410',
      '811100', '811111', '811121', '811198') then 'Automotive'

    when naics_ch in ('522110', '522120', '522130') then 'Banks'
    when naics_ch in ('812113', '812112', '812199', '812111') then 'Beauty'
    when naics_ch in ('813110') then 'Churches/Religious'

```

```
when naics_ch in ('230000', '231531', '236110', '236115', '236118', '236220', '237210', '237310',
'238000', '238150', '238160', '238210', '238220', '238320', '238330', '238990') then
'Construction/Contractors'
  when naics_ch in ('713940', '611620') then 'Fitness'
  when naics_ch in ('447100', '447110', '447190') then 'Gas_Stations'
  when naics_ch in ('445100', '445110', '445120', '445310', '446110') then 'Grocery/Convenience'
  when naics_ch in ('721110', '721191') then 'Hotels/Lodging'
  when naics_ch in ('621210', '621310', '621320', '621340', '621399', '621400', '621491', '621492',
'621498', '621111') then 'Medical_Offices'
  when naics_ch in ('524200', '541110', '541210', '541211', '541213', '541310', '541320', '541330',
'541410', '541430', '541511', '541512', '541611', '541618', '541620', '541690', '541850', '561110',
'561439', '561499', '561710', '561720', '561730', '561990', '611119') then 'Offices'
  when naics_ch in ('530000', '531000', '531110', '531120', '531122', '531130', '531150', '531210',
'531310') then 'Real_Estate'
  when naics_ch in ('722410', '722511', '722000', '722513', '722515') then 'Restaurants/Bars'
  when naics_ch in ('488110', '447190', '448140', '448210', '446120', '448190', '442110', '446130',
'453310', '448100', '448310', '451120', '453320', '453110', '451110', '451211', '452319', '453220',
'453920', '453991', '453998', '453910', '531121', '442210', '442299', '443142', '444130', '444190',
'444220') then 'Retail'
  when naics_ch in ('611111', '611113', '611691') then 'Schools'
  when naics_ch in ('491110', '493100', '493110', '493190') then 'Warehousing/Postal'
  else 'Unassigned'
end as naics_group
```