



Census Block Group Calculator API Instructions

The following instructions are for vendors who would like to use an application programming interface (API) to retrieve student census block group numbers.

Solution Options

We recommend creating a batch process that runs in the background every 24 hours. The initial batch will process all addresses and return the census block group number. Subsequent batches will update new or modified records. You can also create a post-function on saving/updating addresses in their Student Information Software (SIS) front end.

Address Types

There are several types of addresses returned. The following are the most accurate types:

- Point Address – This has found the exact building rooftop.
- Sub Address – This has found the exact building rooftop and has an apartment unit, floor, or individual building within a complex.

Address Accuracy

Verify address accuracy if either of the following occur:

- The address returned was **not** a Point or Sub Address.
- The address returned is a Point or Sub Address and has a confidence level less than one hundred percent.

Use the [Census Block Group Map to verify accuracy.](#)¹ See the Census Block Group Map Instructions for more information.

Instructions

Use an Environmental Systems Research Institute (ESRI) Geocoding URL and a Census Bureau URL to create a GEOID. Send an address to the ESRI geocoder if:

- The student is economically disadvantaged and
- The address has been updated since the last process run.

The system will run addresses through the geocoder one at a time. It will return X and Y coordinates, score values, and address types.

Changed as of 2020-2021

¹<https://tea-texas.maps.arcgis.com/apps/webappviewer/index.html?id=90eaceb0831a4eda96434231e652591b>

Part 1: ESRI Geocoding URL

1. Replace words in **bold** with variables.
2. "maxLocations=1" returns the top scoring result.
3. See Figure 1 example for the response format.
 - x = -97.738750604478156
 - y = 30.278829394944918
 - Score = 100
 - Addr_type = PointAddress

https://tea4avgrover.tea.texas.gov/public/rest/services/locator2021R2/GeocodeServer/findAddressCandidates?f=json&address=" + strStreet1 + "&address2=" + strStreet2 + "&city=" + strCity + "®ion=" + strState + "&postal=" + strZip + "&postalExt=" + strZipExt + "&maxLocations=1&outFields=*²

² The URL changed for the 2020-2021 year.

```

{
  "spatialReference": {
    "wkid": 4326,
    "latestWkid": 4326
  },
  "candidates": [
    {
      "address": "1701 N Congress Ave, Austin, Texas, 78701",
      "location": {
        "x": -97.738750604478156,
        "y": 30.278829394944918
      },
      "score": 100,
      "attributes": {
        "Loc_name": "World",
        "Status": "M",
        "Score": 100,
        "Match_addr": "1701 N Congress Ave, Austin, Texas, 78701",
        "LongLabel": "1701 N Congress Ave, Austin, TX, 78701, USA",
        "ShortLabel": "1701 N Congress Ave",
        "Addr_type": "PointAddress",
      }
    }
  ]
}

```

Figure 1: ESRI Geocoding Response Format

Part 2: Census Bureau URL

Use the following API call to send the X and Y coordinates to the Census Bureau. It will return several geography variables.

4. Replace words in **bold** with variables.
5. "Public_AR_Current" and "Current_Current" makes the API return the most up to date data.
6. "layers=12" returns the Census block data.
7. See Figure 2 example for the response format.

[https://geocoding.geo.census.gov/geocoder/geographies/coordinates?x= + strX + "&y=" + strY + "&benchmark=4&vintage=410&format=json"](https://geocoding.geo.census.gov/geocoder/geographies/coordinates?x= + strX +)³

³ The URL changed for the 2021-2022 year.

```

{
  "result": {
    "input": {
      "benchmark": {
        "id": "4",
        "benchmarkName": "Public_AR_Current",
        "benchmarkDescription": "Public Address Ranges - Current Benchmark",
        "isDefault": false
      },
      "vintage": {
        "id": "4",
        "vintageName": "Current_Current",
        "vintageDescription": "Current Vintage - Current Benchmark",
        "isDefault": true
      },
      "location": {
        "x": -97.73875060447816,
        "y": 30.278829394944918
      }
    },
    "geographies": {
      "2010 Census Blocks": [
        {
          "SUFFIX": "",
          "GEOID": "484530007001025",
          "CENTLAT": "+30.2790301",
          "BLOCK": "1025",
          "AREAWATER": 0,
          "STATE": "48",
          "BASENAME": "1025",
          "OID": "210403962088096",
          "LSADC": "BK",
          "FUNCSTAT": "S",
          "INTPTLAT": "+30.2790301",
          "NAME": "Block 1025",
          "OBJECTID": "11164917",
          "TRACT": "000700",
          "CENTLON": "-97.7379909",
          "BLKGRP": "1",
          "AREALAND": "14151",
          "INTPTLON": "-97.7379909",
          "MTFCC": "G5040",
          "LWBLKTYP": "L",
          "COUNTY": "453"
        }
      ]
    }
  }
}

```

Figure 2: Census Bureau Response Format

Part 3: Create the GEOID

8. Take the state, county, tract, and block group, and put them together to create the 12-digit GEOID.
 - a. Example from Figure 2 returned: State = 48, County = 453, Tract = 000700, Block Group = 1. Therefore, the 12 Digit GEOID = 484530007001.
9. Save the 12-digit GEOID and score to the GEOID and GEOID Confidence columns in the database respectively.

Note: Do not use the 15-digit GEOID that comes back with geographies.