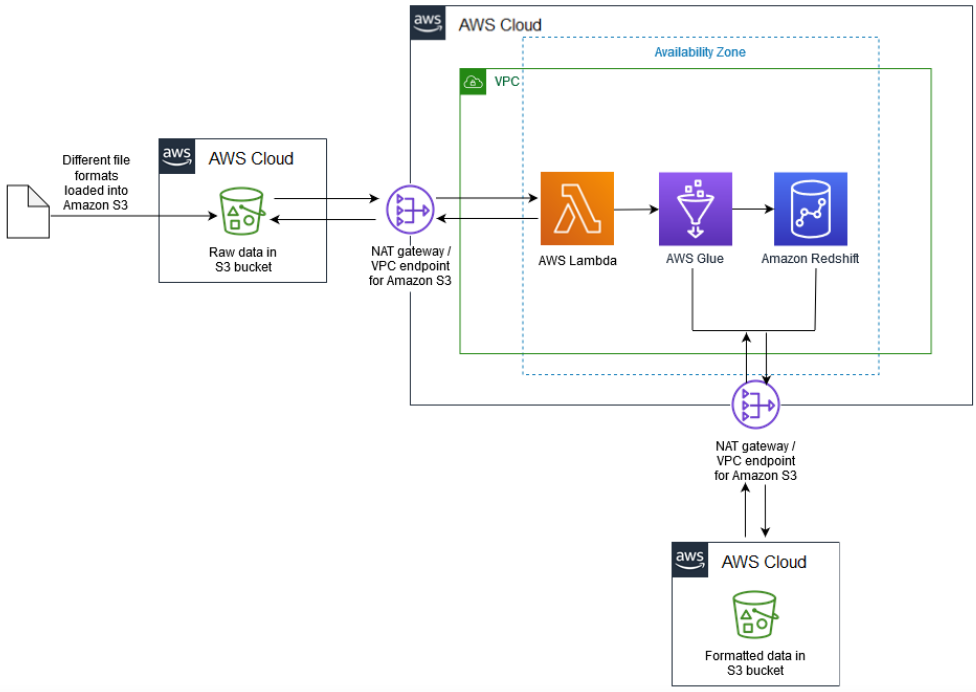
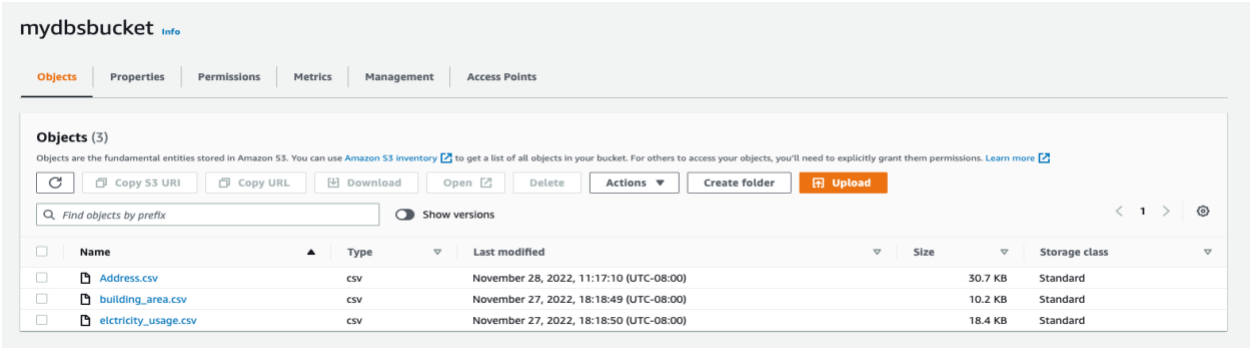
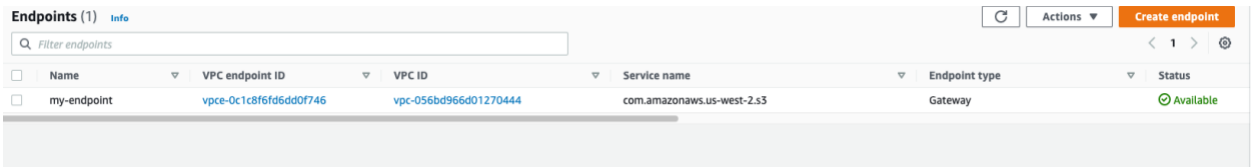
My Workflow:



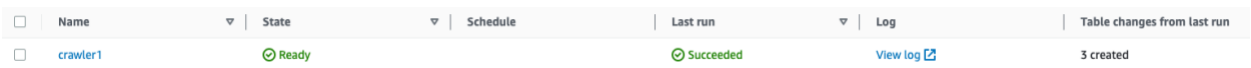
Creating a S3 bucket and uploading data files.



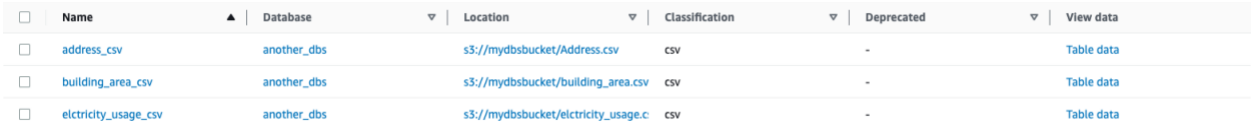
Creating VPC endpoints for the ETL process of the data present in S3 bucket



Creating crawler to import data from S3 bucket.

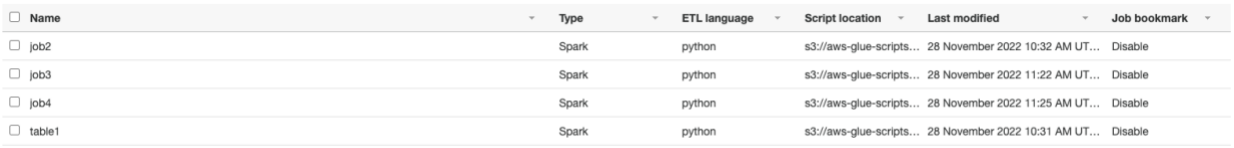


Imported tables from the s3 bucket.

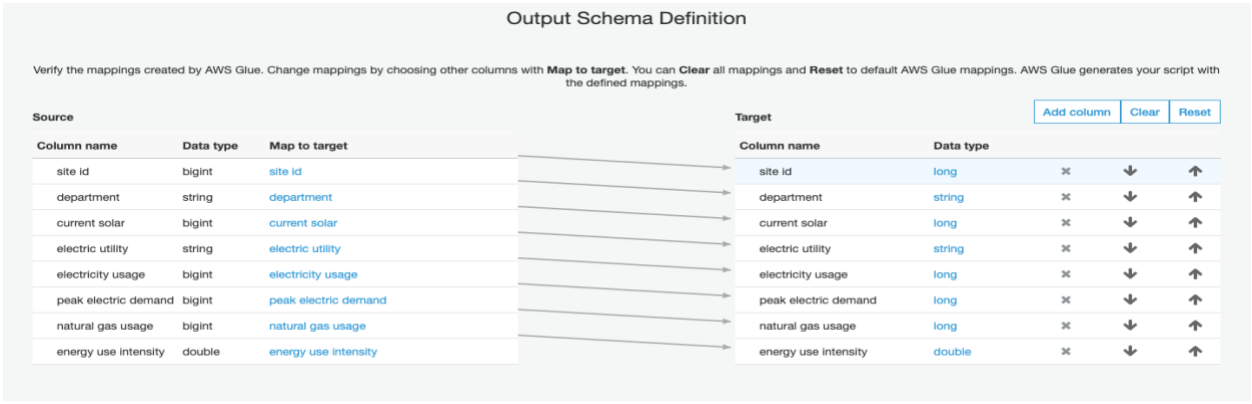


Name	Database	Location	Classification	Deprecated	View data
address_csv	another_dbs	s3://mydbsbucket/Address.csv	csv	-	Table data
building_area_csv	another_dbs	s3://mydbsbucket/building_area.csv	csv	-	Table data
elctricity_usage_csv	another_dbs	s3://mydbsbucket/elctricity_usage.c	csv	-	Table data

Creating jobs for each of the tables in the AWS glue database where the data source is the S3 bucket and data target is the redshift database using the Amazon redshift connection

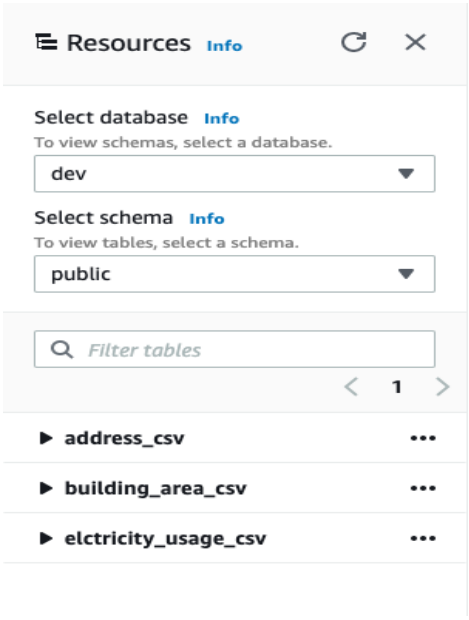


Name	Type	ETL language	Script location	Last modified	Job bookmark
job2	Spark	python	s3://aws-glue-scripts...	28 November 2022 10:32 AM UT...	Disable
job3	Spark	python	s3://aws-glue-scripts...	28 November 2022 11:22 AM UT...	Disable
job4	Spark	python	s3://aws-glue-scripts...	28 November 2022 11:25 AM UT...	Disable
table1	Spark	python	s3://aws-glue-scripts...	28 November 2022 10:31 AM UT...	Disable



Creating Redshift cluster for querying

Cluster	Status	Cluster namespace	Storage capacity us...	CPU utilization	Snapshots	Notificati...	Tags
redshift-cluster-1 dc2.large | 1 node | 160 GB	Available	0801646e-0058-4373...	< 1%	2%	-		



Considering 0.35$ per kWh. Find top 10 building types with highest cost.

◦ select building."building type", avg(elec_usage."electricity usage") as electricity_usage, 0.35* electricity_usage as total_cost
from public.building_area_csv as building
right join
public.elctricity_usage_csv as elec_usage
on building."site id"=elec_usage."site id"
group by building."building type"
having total_cost > 500
order by total_cost desc limit 10;
order by avg_cost;

buildingtype	electricity_usage	total_cost
CONVENTION_CN	8598781	3009573.35
TRANSPORTATIONTE	5355298	1874354.30
LABORATORY	3817577	1336151.95
MRF	3410495	1193673.25
COURTHOUSE	3059932	1070976.20
PARKING	881190	308416.50
DISTRIBUTION	805210	281823.50
PERFORMINGARTS	780194	273067.90
VOCATIONALSCHOOL	729252	255238.20
OFFICE	715092	250282.20

Top 10 departments that use natural gas under PG&E electric utility.

◦ select elec_usage."department", avg(elec_usage."natural gas usage") as natural_gas_usage from public.elctricity_usage_csv as elec_usage
where elec_usage."electric utility"='PG&E'
group by elec_usage."department"
order by natural_gas_usage desc limit 10;

department	natural_gas_usage
Convention	37683
Arts	28383
Library	10378
Police	9375
Public Works	3898
City Clerk	856
Streets	787
Fire	670
Human Services	665
Parks	573

Top 10 departments that use natural gas under SJCE electric utility select elec_usage."department", avg(elec_usage."natural gas usage") as natural_gas_usage
from public.elctricity_usage_csv as elec_usage
where elec_usage."electric utility"='SJCE'
group by elec_usage."department"
order by natural_gas_usage desc limit 10;

department	natural_gas_usage
Housing	5280
Neighborhood	2974
Police	1537
Fire	935
Public Works	377
Human Services	258
Library	180
Parks	172
Streets	0
Public Transit	0

Sites with highest electricity usage under SJCE utility.

◦ select elec_usage."department", avg(elec_usage."natural gas usage") as natural_gas_usage from public.elctricity_usage_csv as elec_usage
where elec_usage."electric utility"='SJCE'
group by elec_usage."department"
order by natural_gas_usage desc limit 10;

sitename	buildingarea	electricityusage	cost
Pecos Park - Community Center	93670	1595744	558510.40
Steele Indian School Restroom	67470	401605	140561.75
Deer Valley Pool	60000	121351	42472.85
Goelet A Beuf Community Center	48000	728857	255099.95
Encanto Maintenance and Warehouse	42090	250259	87590.65
Paradise Valley Community Cntr	35506	332983	116544.05
Deer Valley Community Center	34294	375779	131522.65
Washington Activity Center	32971	346891	121411.85
Papago Sports Complex	31426	193986	67895.10
Maryvale Community Center	27000	760600	266210.00

Department and respective building type that highly powered by solar enegry.

◦ select electricity."department", building."building type",sum(electricity."current solar") as total_current_solar_usage, count(electricity."current solar") as count, avg(electricity."current solar") as avg_current_solar_usage from public.elctricity_usage_csv as electricity
inner join
public.building_area_csv as building
on building."site id"=electricity."site id"
group by electricity."department", building."building type"
order by total_current_solar_usage desc
limit 10;

department	buildingtype	total_current_solar_usage	count	avg_current_solar_usage
Aviation	PARKING	5400	8	675
Public Works	PARKING	1326	2	663
Aviation	OFFICE	580	7	82
Public Works	REPAIRSERVICES	540	4	135
Housing	MULTIHOUSING	461	19	24
Public Transit	TRANSPORTATIONTE	207	14	14
Library	LIBRARY	150	15	10
Parks	COMMUNITYCENTER	140	17	8
Public Works	OFFICE	100	8	12
Convention	CONVENTION_CN	100	2	50