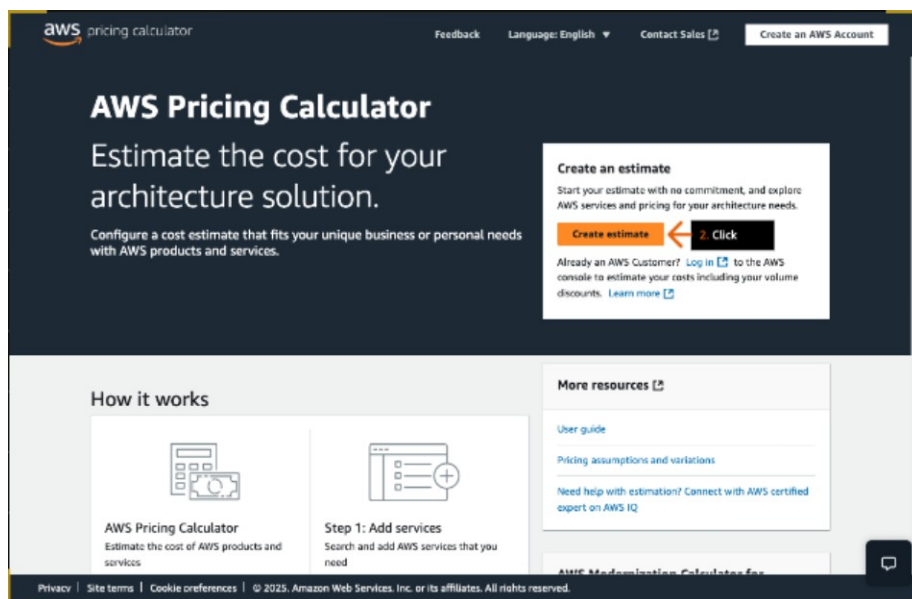# EC2 COST ESTIMATION FOR VARIABLE WORKLOADS
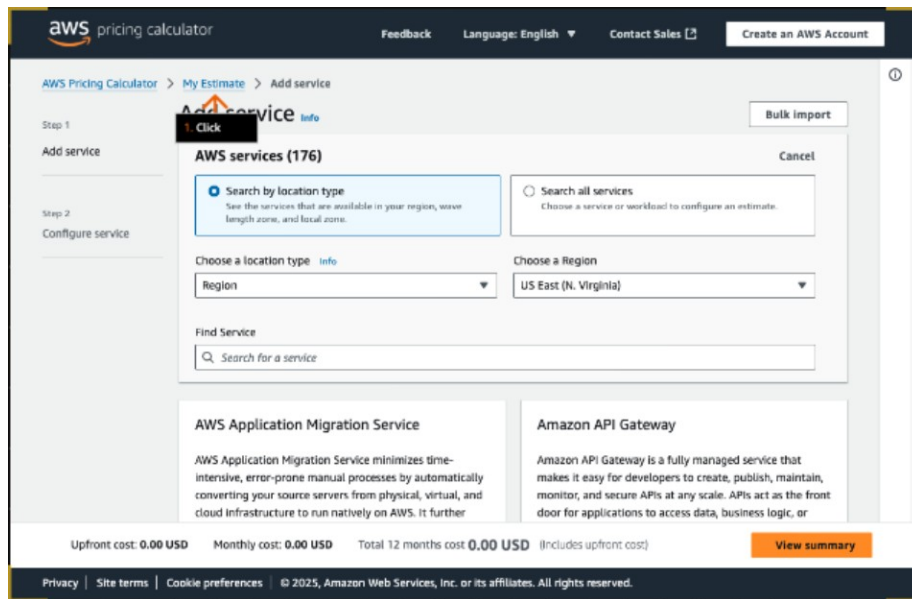
Objectives:

- Create logical pricing groups.
- Create an estimate for Amazon EC2 usage.

Steps / Procedures / Instructions:

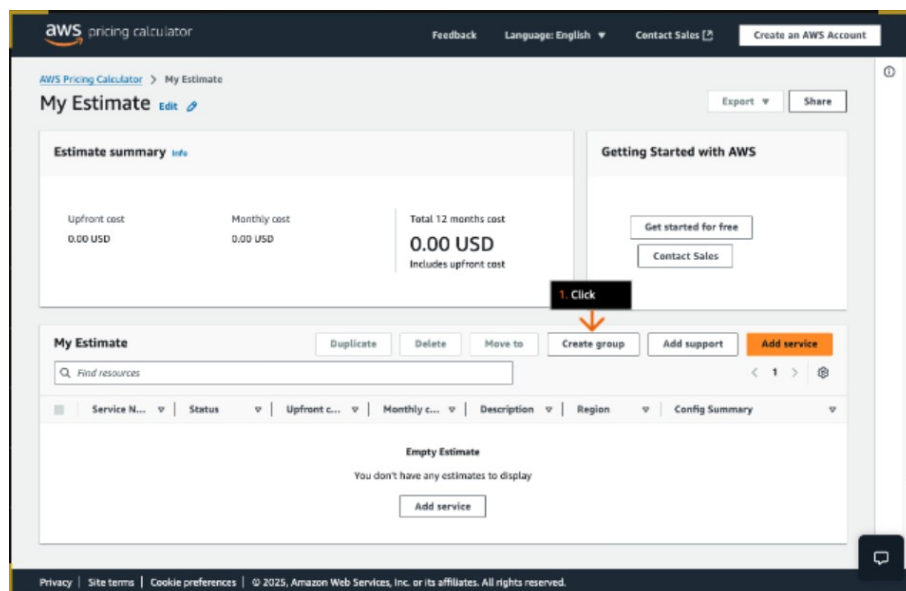- In a new browser tab (or window) address bar (not shown), type: https://calculator.aws
- Press Enter.
- On the AWS Pricing Calculator home page, click Create estimate.

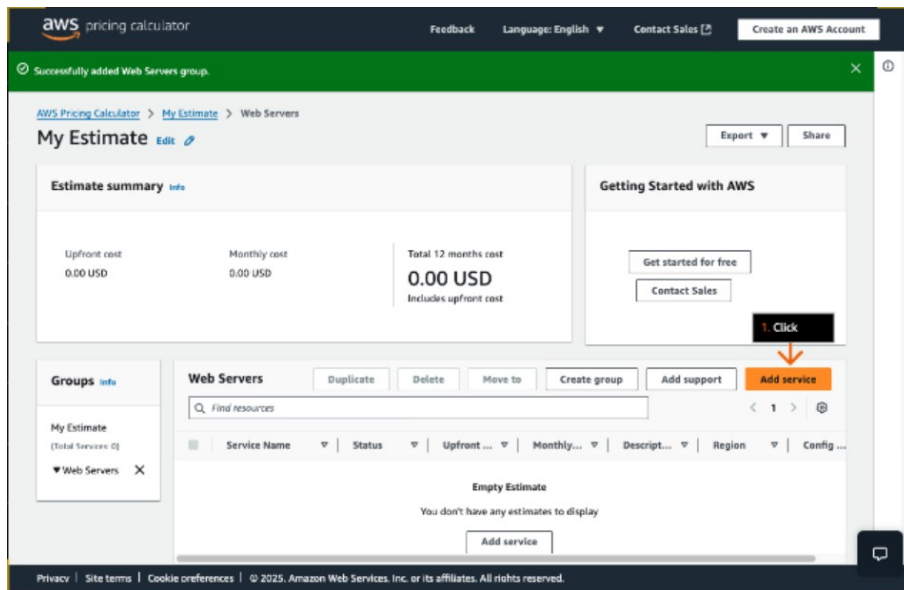- On the top breadcrumb menu, click My Estimate.

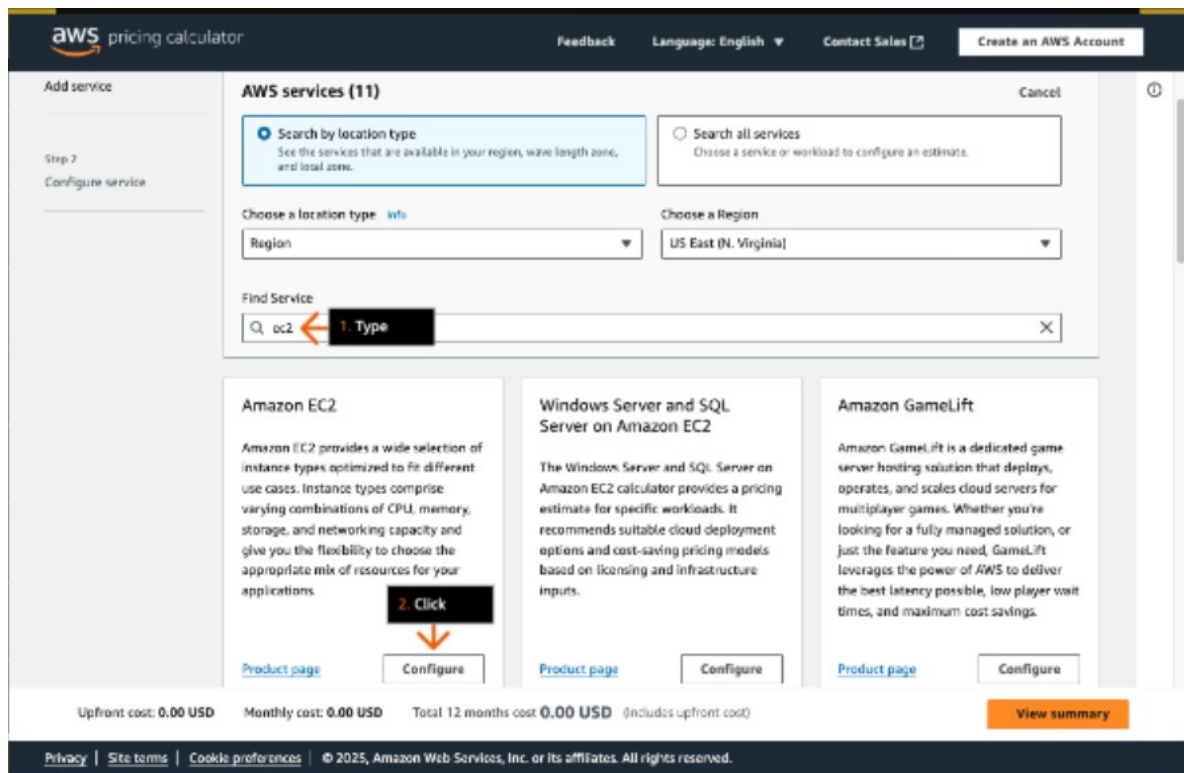- In the My Estimate section, click Create group.

- In the pop-up box, for Group name, type: Web Servers
- Click Create group.

- Click Add service.

- In the AWS services section, for Find Service, type: ec2
- On the Amazon EC2 card, click Configure.

- In the Add service step, for Description, type: Web Server Estimate
- For Choose a location type, on the dropdown list, choose Region.
- For Choose a Region, choose US East (N. Virginia).

Service pricing can differ between AWS Regions, so choosing the correct Region is important for an accurate pricing estimate.

- Scroll down to EC2 specifications.
- For Tenancy, choose Shared Instances.

    - By default, EC2 instances run on shared tenancy hardware. This means that multiple AWS accounts might share the same physical hardware. Choosing a dedicated option increases instance pricing.

- For Operating system, choose Linux.

    - Operating system licensing can affect instance pricing. Some operating systems and databases allow you to bring your own license (BYOL) while others have licensing costs built into the hourly rates.

- For Workloads, review each usage type.

    - To see use case details, you can click each usage type.

Workloads are the patterns that match your Amazon Elastic Compute Cloud (Amazon EC2) usage. Choosing the workload that most closely matches your usage will optimize your cloud costs.

- Choose the radio button to select Daily spike traffic.
- For Workload days, choose the seven check boxes to select all days (Sunday through Saturday).

- For Baseline, type: 2
- For Peak, type: 4
- For Duration of peak, in the two text boxes, type: 8 (for hours) and 0 (for minutes)

Baseline usage refers to the minimum amount of servers during nonpeak time. Conversely, peak usage represents the amount of servers required at peak periods.

- In the EC2 Instances section, for Any Instance family, under vCPUs, choose 2.
- Under Memory (GiB), choose 4 GiB.
- Under Network performance, choose Any Network Performance.
- Below that, under Instance name, choose the radio button to select t3.medium.

When creating estimates, right sizing instances is important. Right sizing is the process of looking at instance resources and identifying opportunities to remove or downsize without compromising capacity or other requirements, which results in lower costs.

- In the Payment options section, choose On-Demand.

  - Using On-Demand Instances, you can pay for compute capacity by the hour or second with no long-term commitments.

- Review the two Savings Plan options.

  - Savings Plans provide savings beyond On-Demand rates in exchange for a commitment of using a specified amount of compute power (measured per hour) for a 1-year or 3-year period.

Amazon EC2 offers several pricing models to help customers optimize their compute costs and capacity needs.

- Click to expand other purchasing options.
- Review the two Reserved Instances options.
  - A Standard Reserved Instance offers a higher discount, but allows modifications only within the same instance family; for example, t3.medium to t2.large. A Convertible Reserved Instance provides a lower discount, but allows modifications across different instance families, operating systems, and tenancy configurations.
- Click to expand Show calculations.

- Click estimated workload hours.

A Reserved Instance commits you to a 1-year or 3-year term, during which you receive billing benefits for each of the 24 billable hours in a day for specific instance parameters, such as instance type, Region, operating system, and tenancy.

- In the pop-up box, scroll down to Workload hours per month.
- Review how your workload hours are broken down per day.
- Review to see that instances 3 and 4 are being charged for only 8 hours per day while instances 1 and 2 are being charged for 24 hours per day.
- Under Utilization summary, review the Total On-Demand instance hours per month.
- Click Close.

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Baseline (count)	2	2	2	2	2	2	2
Peak (count)	4	4	4	4	4	4	4
Minutes	0	0	0	0	0	0	0
Hours	8	8	8	8	8	8	8
Total duration in hours	8	8	8	8	8	8	8
Baseline+ 1. Scroll	4	4	4	4	4	4	4

Workload hours per month

This table calculates the total instance utilization hours per month for your estimated daily workload.

2. Review

< 1 ... >

Instance c...	Sunday h...	Monday ...	Tuesday ...	Wednesd...	Thursday ...	Friday Ho...	Saturday ...	Total hours pe...
1	24	24	24	24	24	24	24	168
2	24	24	24	24	24	24	24	168
3	8	8	8	8	8	8	8	56
4	8	8	8	8	8	8	8	56

3. Review

Utilization summary

Total On-Demand instance hours: 1946.6666   4. Review

5. Click

Close

- Click to expand Amazon Elastic Block Store (EBS).
- For Storage for each EC2 Instance, choose General Purpose SSD (gp3).
- For General Purpose SSD (gp3) - IOPS, type:30
    - Inputs/outputs per second (IOPS) is a unit of measurement that represents the number of input/output operations that can be performed per second on an EBS volume.
- For Storage amount, type:10
- For Unit, choose GB.

Amazon Elastic Block Storage (Amazon EBS) offers various storage types based on your workloads. For basic web servers, General Purpose SSDs might suffice. However, for more specialized workloads, involving large data transfer or high input-output operations, other storage types might be appropriate.

- For Snapshot Frequency, choose Weekly.
- For Amount changed per shapshot, type: 1
- For Unit, choose GB.
- Click to expand Data transfer.

You can back up the data on your Amazon EBS volumes by making point-in-time copies, known as Amazon EBS snapshots. A snapshot is an incremental backup, which means that we save only the blocks on the volume that have changed since the most recent snapshot. This minimizes the time required to create the snapshot and saves on storage costs by not duplicating data.

- For Data transfer from, choose Internet (free).
- For Enter amount, type: 1
- For Data amount, choose TB per month.
- For Data transfer to, click to expand the menu.
- Review the outbound transfer options.
- Choose Internet.

There is no charge for all data transfer into the AWS network from the outside internet.

- For Enter amount, type: 100
- For Data amount, choose GB per month.
- Click to expand Show calculations.
- Go to the next step.

When transferring data from AWS to the internet, the costs vary based on the Region where AWS resources are located, with Region-specific pricing structures. Data transfer between AWS Regions follows a specific cost structure in which inbound transfer to a Region is generally free and outbound transfer from one Region to another incurs charges that depend on the originating Region.

- Review to see how your data transfer rates are calculated.
- At the bottom of the page, click Save and add service.

- Click View summary.

- In the Web Servers section, click Add support.
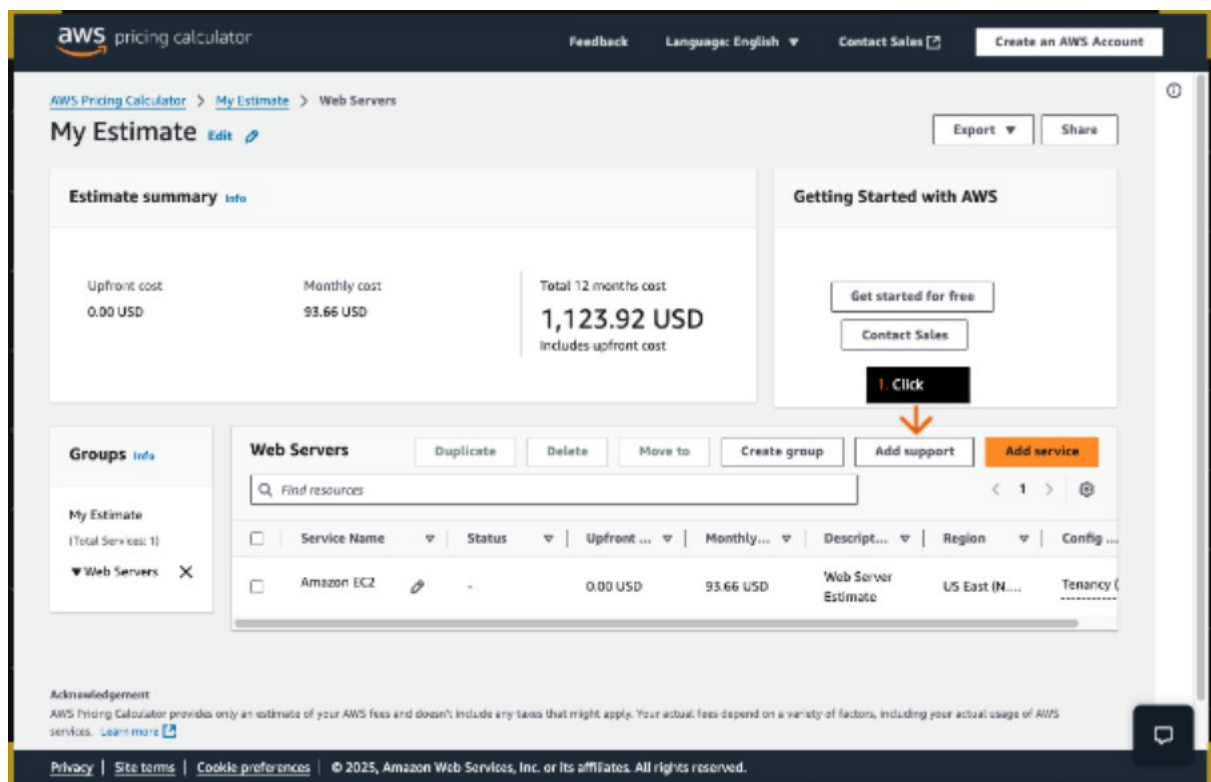
AWS Support helps with technical issues and additional guidance to operate infrastructures in the AWS cloud.
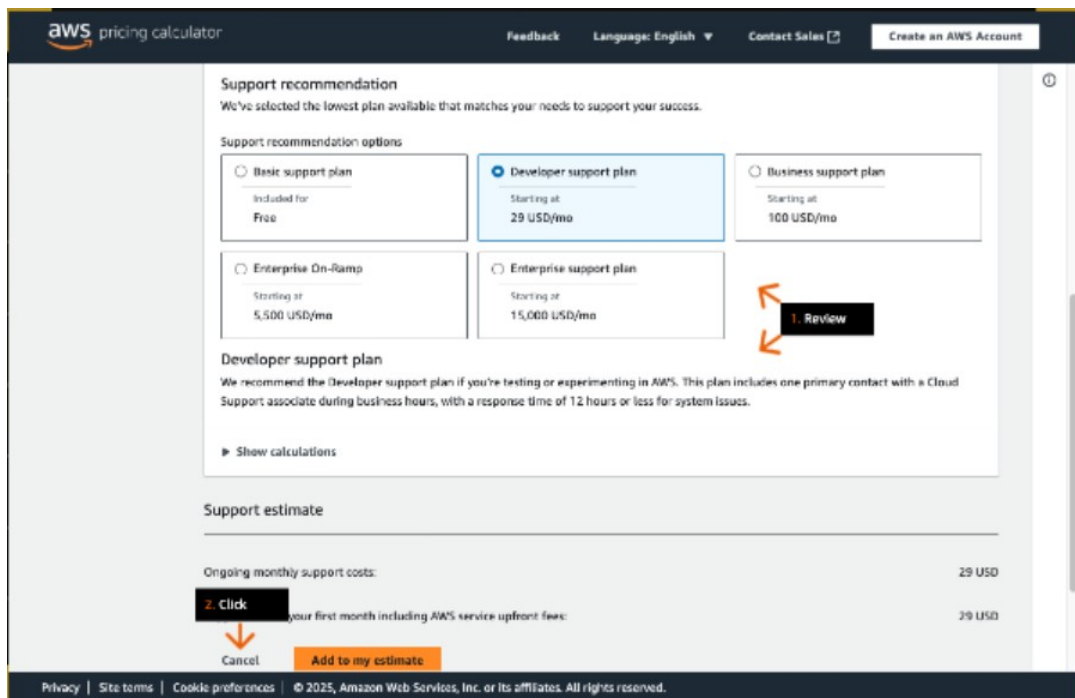
- For Support recommendation options, review each option.

- To see details, you can choose each option.
- Click Cancel.

AWS Support plans are designed to give you the right mix of tools and access to expertise so that you can be successful with AWS while optimizing performance, managing risk, and keeping costs under control.

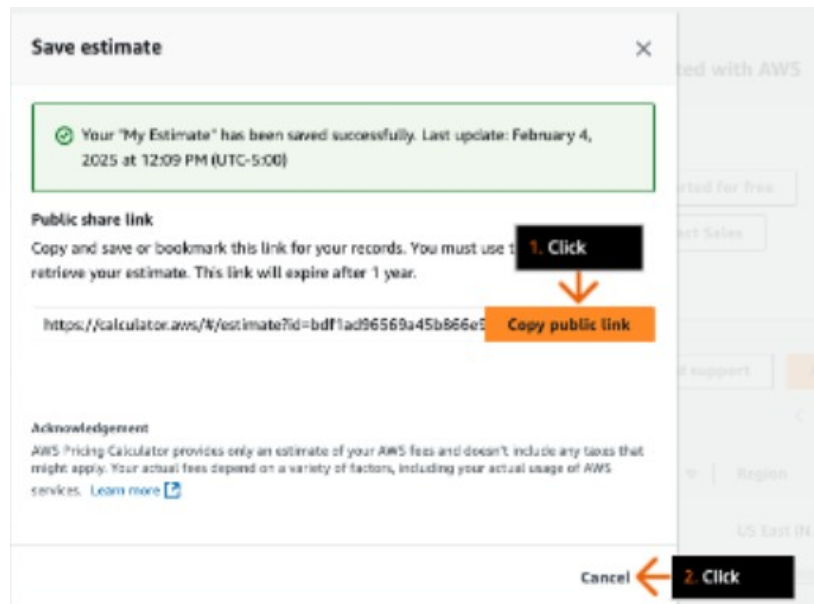- Review the Estimate summary section.
- Click Share.
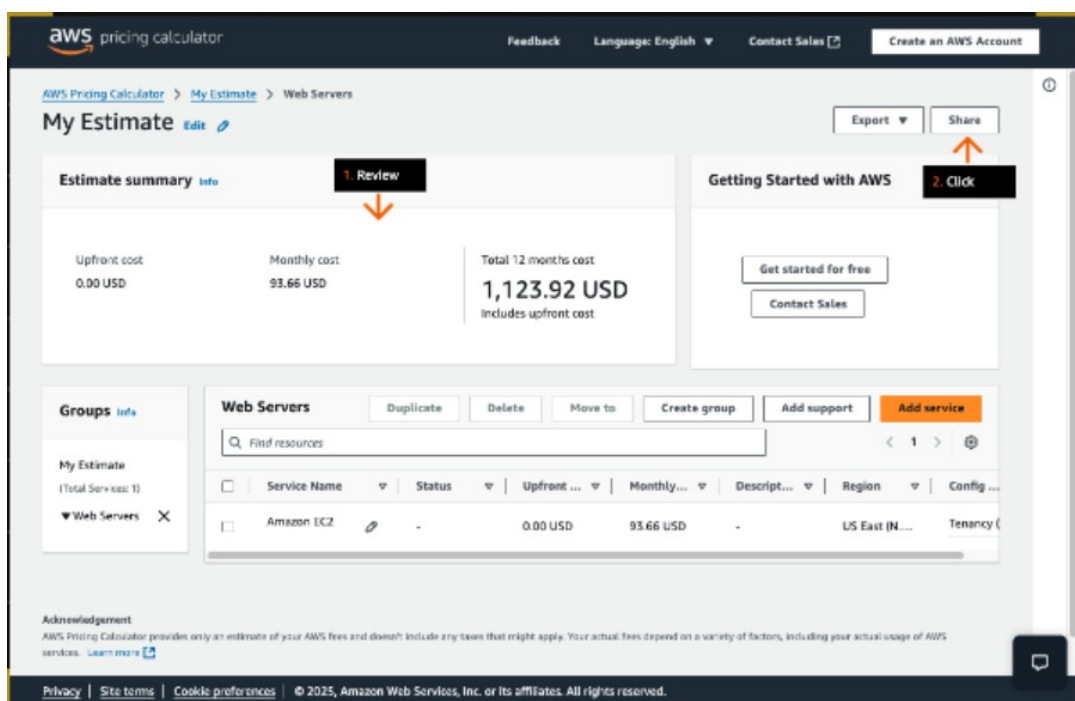
You can create a unique, public link for each estimate that you create.

- In the pop-up box, click Agree and continue.
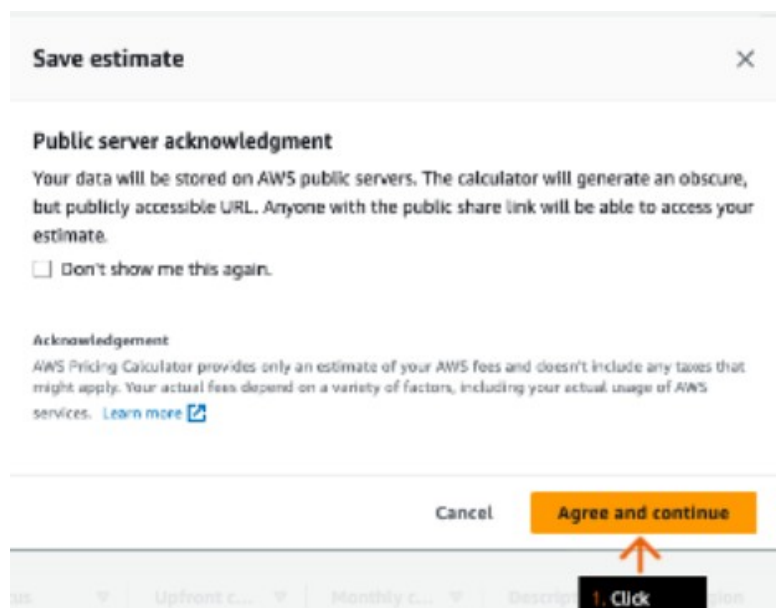
- Click Copy public link.
    - You can paste this link in a text editor for future reference.
- If the pop-up does not close automatically, click Cancel.

Use the generated link to share the estimate with stakeholders or access the estimate again at a later time. Estimates are saved to AWS public servers.