



System Requirements

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Last Updated	By
September 1, 2017	Ryan Ohlson
December 4, 2017	Ryan Booz

End-user System Requirements by Product

EnergyCAP is Enterprise software. All end-user system requirements below assume that client hardware is rotated on a 4-5 year schedule. While EnergyCAP does not have specific recommendations on processors or GPUs, any computer with **Celeron** or **Pentium**-like capabilities will likely have **sub-par performance** if using EnergyCAP is primary job function.

EnergyCAP Version 7 (HTML)

Client Component	Minimum Requirement
Processor	Intel i3 or AMD 6300 (2014+)
Memory	4GB

Display	1280 x 900
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Supported Browsers

- Google Chrome
- Firefox
- Microsoft Edge

Supported Versions

57+
53+
41+

EnergyCAP Version 3 (Flash)

Client Component	Minimum Requirement
Operating System	
- Windows	7+
- Macintosh	10.11+
Processor	Intel i3 or AMD 6300 (2014+)
Memory	4GB
Display	1280 x 900
Supported Browsers	Supported Versions
- Google Chrome w/ Pepper Flash enabled	57+
- Firefox w/ Flash plugin installed	53+
- Internet Explorer w/ Flash ActiveX installed	11

EnergyCAP Version 6 (Installed Windows Client)

Supported OS	Supported Versions
Operating System	
- Windows	7+
Processor	Intel i3 or AMD 6300 (2014+)
Memory	4GB
Display	1280 x 900

On-Premise Hosting Requirements

The following additional system requirements pertain to clients who opt out of an ECI Hosting Services.

EnergyCAP is developed within the Microsoft ecosystem, utilizing .NET runtimes for the web application and SQL Server for the data storage layer. In accordance with generally stated guidelines from Microsoft, EnergyCAP strongly suggest that the application servers and database server(s) be separated into separate environments for best performance and maintenance.

Please note: If you do not have the technical staff that knows how to effectively tune SQL Server for optimal performance, EnergyCAP may not perform as well. EnergyCAP offers a fully hosted, Software-as-a-Service option that may be better suited for your situation.

Server Configuration Guidelines

Web Server Configurations

Requirement	Minimum	Recommended
Windows Server	2012 R2 – 64 bit	2016 – 64 bit
Web Server	IIS 8.5 .Net 4.6.1	IIS 10 .Net 4.7
Memory	4GB	6GB
Processors	2 cores	2-4 cores
.NET Framework	.Net 4.6.2 & .Net Core 2	.Net 4.6.2 & .Net Core 2
Crystal Report Runtime	XX	XX

SQL Server Configurations

Requirement	Minimum	Recommended
Windows Server	2012 R2 – 64 bit	2016 – 64 bit
SQL Server 64-bit	2012 SP4	2016 SP1+
Operating System	Windows Server 2012 R2	Windows Server 2016
Memory	8GB-16GB	16GB-32GB (load dependent)
Processors	4 cores	8+ cores

Disk Access		

Database Server Guidelines for On-Premise Deployment

SQL Server performance is usually the biggest factor in a positive EnergyCAP experience. Hardware specifications are dependent upon database size, features utilized, and desired performance. EnergyCAP, Inc. successfully hosts hundreds of client databases in a multitenant, virtualized environment, taking great care to monitor real-life usage patterns and the impact of database changes on server performance.

Also, per Microsoft guidelines and industry best-practices, the database server should not host any applications other than SQL Server.

Trace Flags and Advanced Configuration

Listed below are some SQL Server setup guidelines that can assist your technical staff in preparing the server environment for EnergyCAP. Please review any settings that differ from your standard setup practices and evaluate the impact on other databases in this environment.

- Enable the following Trace Flags:
 - 1118 – growing log files at the same rate (good for TempDB)
 - 2371 – If you are hosting on SQL Server 2012. This is the default behavior starting in SQL 2014 and above.
 - 3226 – Stops the logging of successful backup messages in error logs
- Advanced Settings:
 - Optimize for Ad Hoc Workloads = true
 - Cost Threshold for Parallelism = 50
 - Max Degree of Parallelism – Do NOT set to zero (0) or one (1). Please see <https://support.microsoft.com/en-us/help/2806535> for specific guidance from Microsoft.

Memory and Storage

- Memory – The volume and type of EnergyCAP data a client uses will directly impact the size of the database. An large client database tends to be 4-8GB in size after 4 years of usage, although some are much smaller and a few are significantly larger. In general the most accessed data makes up ~60% of the database size. A good **minimum** target for allocated memory would be to allocate 2x the most accessed data. This allows plenty of

space for data and SQL plan caching and should lower the change that memory pressure inhibits performance.

Example: 4GB database * 60% * 2 = 5GB of memory available to SQL Server

This guideline assumes that EnergyCAP is the only user database on the instance. This is a minimum suggestion and can be gauged by measuring, Buffer Pool memory allocations and Page Life Expectancy, among other things.

- Storage and I/O – Per Microsoft and industry best-practice guidelines, EnergyCAP suggests putting your TempDB, Data and Log files on separate drives if possible to reduce contention with other server activities. For virtualized environments, be especially mindful of disk access times and total IOPS available to the storage layer. EnergyCAP heavily utilizes TempDB for some data intensive queries (ad hoc reporting and rollup data processes) which benefit from faster I/O.

Miscellaneous Configuration Information

For some features, EnergyCAP relies on the following outbound communication to utilize data from services that we provide.

- services.energycap.com - Port 443 and 80
- resources.energycap.com – Port 443 and 80
- support.energycap.com – Port 443 and 80
- docs.energycap.com – Port 443 and 80
- www2.energycap.com – port 443 and 80

Frequently Asked Questions

Will EnergyCAP run on Citrix? If yes, for what version of Citrix are you certified and what experience do you have working with Citrix?

ECI does not currently certify Citrix; however, numerous licensees do run EnergyCAP in a Citrix environment. The only known Citrix-related issue has been user permissions that are generally too restrictive to the program folder.

Are there any known issues with multiple sites accessing software across a WAN?

No. In some instances Remote Desktop can be used to mitigate performance issues.

What is the normal network bandwidth utilization needed for EnergyCAP?

Normal constant throughput is between 15–20 kb/sec for any given user in “lite” mode, which is used by ECI-hosted licensees.

Is there any limitation in the length of a Username for authentication?

EnergyCAP accepts usernames of up to 32 characters in length.

Are there any instances where data is transferred to a third party performing a service for the Licensee?

If you use the ENERGY STAR rating service provided by EnergyCAP, then your billing and building data will be transmitted to ENERGY STAR to generate a rating.

Does EnergyCAP provide audit trail capability—the ability to track user activity, such as log-in, log-out, view data, etc.?

EnergyCAP records created and last modified IDs on most top-level objects in the database (e.g., bills, buildings, accounts, meters). We can also enable an audit trail at the database-level for most Bill actions (create, update and delete).

We also anticipate enabling support for more wide-ranging audit tracking as environments are upgrade to SQL Server 2016+ to utilize Temporal Tables.

Does EnergyCAP go through vulnerability and penetration tests?

The EnergyCAP application goes through software vulnerability testing using Netsparker. Our database hosting environment test vulnerabilities using Nessus scans.

In addition to these tests, software code goes through rigorous quality assurance testing that complies with ANSI/IEEE Std 829. Validation tests include build verification testing, unit testing, smoke testing, and regression testing.