User's Guide

PwrSmart™

Version 3.0

NEW BOUNDARY TECHNOLOGIES®

PwrSmart™ User's Guide - Published December, 2009

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Welcome to PwrSmart

Power Management with PwrSmart™

PwrSmart is a simple, automated PC power management solution that centrally controls PC power settings and energy consumption. PwrSmart's flexibility creates a self-monitoring, self-maintaining, enterprise-wide PC power management solution that frees up IT staff, reduces energy costs, extends the life of IT assets and supports green initiatives.

New Features in PwrSmart 3.0

PwrSmart 3.0 provides enhanced, user-friendly functionality that extends IT administrator control over PC power management settings and energy management.

- Simplified Console allows administrators to select from several EPA-recommended power schemes or to create and edit their own custom power schemes right in the Console. In addition, the energy savings calculator is now fully integrated into the Console.
- PwrGroups™ (leveraging patented Smart Update technology) make it simple for IT administrators to dynamically target and group computer with similar power management requirements - standardizing and fine-tuning PC power management across an organization. PwrGroups can be based on Active Directory group membership, PC location, IP address ranges, hardware configuration, operating system language, time zones and many other parameters. Laptop and Desktop PwrGroups are built into included in the Console.
- Customizable Power Schemes allow IT administrators to control and enforce multiple power profiles on the same system to accommodate different power settings depending on the time of day - any computer, any setting, any time.
    - Power management events can be scheduled to wake up, shut-down, hibernate or standby PCs after a pre-set period of inactivity or on a schedule.
    - Alternate Settings option lets IT administrators configure settings that differ from a scheme's default settings for use during a specific time period each day.
    - Stay-awake period allows IT administrators to override power management actions in order to patch, update, scan, or back up PCs on a predetermined schedule. Stay-awake period can also be used to give users a block of time when they can remotely access their workstations before the PCs enter their scheduled hibernation period.
    - Software exclusions allow administrators to exempt PCs from scheduled power management events when specific applications are running to ensure that critical processes are not interrupted.
- Dynamic energy savings calculator displays instant analysis of energy saved on the managed computers based on multiple criteria. The calculator also allows administrators to compare energy savings over two different time spans or different groups of computers and to project energy savings out to an annual basis. Multiple currencies are supported in the calculator.
- Flexible reporting engine lets administrators create standard or customized reports.
- Security Roles give administrators the flexibility to specify pre-defined roles and to customize permissions to allow or deny access to specific functions in the PwrSmart Console.

New Boundary Technologies is an EPA ENERGY STAR Service and Product Provider partner.

Notes on the Documentation

The PwrSmart documentation includes online Help and a Tutorial. This document is a portion of the PwrSmart Online Help (below) made available as a PDF. It focuses specifically on using the power management features. For additional information on the PwrSmart console, refer to the online documentation (installed with the PwrSmart console and available via its Help menu) or refer to the Prism Console User's Guide available on the New Boundary Technologies website.

Tutorial

Please review the Tutorial to gain a basic understanding of PwrSmart and to complete an exercise that leads you through the major features available with PwrSmart. The Tutorial is available through the Help menu in the console.

Online Help

When you select **Help | PwrSmart Help** or click the **Help** button on a dialog box, the online help is displayed. The online help provides information on all topics related to power management and the use of the PwrSmart console.

Conventions Used in the Help and User Guides

Buttons, fields, and options	The names of individual fields or options on a pane or dialog box are in **bold text**. For example, **Save** button.
Menus	A vertical line (|) is used to designate an item on a menu. For example, **File | Open** refers to the Open option on the File menu.
Tabs on a dialog box	A vertical line (|) is used to designate specific tab on a dialog box. For example, **Channel Properties | Licenses** tab refers to the Licenses tab on the Channel Properties dialog box.
Tabs on the main window	The Console window is divided into two main panes—the tree view on the left and details pane on the right. A vertical line (|) is used to designate the combination of a specific tab in the tree view and a specific tab in the details pane. For example, **Managed | Members** tab refers to the Members tab in the details pane when the Managed tab is selected in the tree view.

Contacting Technical Support

If you are unable to locate answers to your questions within this help file, please use the following resources to receive assistance:

Web site: http://www.newboundary.com

Here you will find the online New Boundary Technologies Support Forum, system requirements, knowledge base articles, and responses to frequently asked questions. The Support Forum is an interactive discussion tool that will bring you in touch with other users of New Boundary Technologies software.

Phone: 612-379-1851
or 800-747-4487

Available 8:30 A.M. to 5:00 P.M. Central Time, Monday through Friday

PwrGroups

PwrGroups: Dynamic Groups

PwrGroups let you create customized rules to define groups based on very specific criteria and let you specify multiple values for evaluating and adding group members. The Console provides an Expert to help you with each step of the group set up or lets you type rules directly into an editor. PwrGroups can be as simple as matching a file name or as complex as identifying computers based on the presence or absence of multiple characteristics.

PwrGroups are dynamic. If a computer no longer meets the criteria for group membership, it removes itself from the group. Likewise, if a new computer meeting the criteria for group membership is added to the Channel, it automatically adds itself to the PwrGroup.

Adding a PwrGroup

To set up a PwrGroup in the Channel:

1. With the Managed tab open in the tree view, right-click on the ***PwrGroups*** branch in the tree view, then choose **Create Group** from the pop-up menu.
2. In the Rule Expert: Choose a Type of PwrGroup dialog, select the option button for **Subgroup Based on Rule**. Click **Next**.

   Note: If an **All Others** group has been created, this dialog is skipped. Proceed to step 3.

3. In the Rule Expert: Assemble a Rule Clause dialog box, define the rule by setting the value type, operator, and value. Click **Next**.

   Note: As you select options on this dialog box, the text of the rule is displayed in the **Rule Text** field. Use this information to confirm the content of the rule and learn how to type rules directly in the Rules Editor.

4. In the Rule Expert: Rule Name dialog box, type a name for the group that will be defined by the rule you just created. Click **Next**.
5. In the Edit Rule dialog box, check the syntax of the rule or add logical operators to expand the rule. Click **Finish**.

Subgroups are populated in the Channel when a managed computer contacts the Channel Server.

Creating an All Others Group

An All Others group includes all of the computers in the Channel that are not members of another PwrGroup.

1. With the Managed tab open in the tree view, right-click on the ***PwrGroups*** branch in the tree view, then choose **Create Group** from the pop-up menu.
2. In the Rule Expert: Choose a Type of PwrGroup dialog, select the option button for **All Others Group**. Click **Next**.
3. In the Rule Expert: Rule Name dialog box, enter a name for the new group or leave the default name—**All Others**. Click **Next/Finish**.

Editing an Existing PwrGroup Rule

After creating a PwrGroup group, you can edit the rule to make changes in the value type, values, or operators. When you edit a rule, the group members are removed from the group and the group is re-populated, based on the new criteria. You can edit an existing PwrGroup group through the Group properties.

1. Right click on the PwrGroup name in the tree view.
2. Select **Properties** from the pop-up menu.
3. In the Group Properties | General tab, click the **Edit Rule** button.
4. In the Edit Rule dialog box, edit the rule directly in the **Rule Text** field. Or, click the **Add Rule Expert** button to add additional qualifiers to the rule.
5. Click the **Finish** button to save your changes.

Power Management

Power Management with PwrSmart

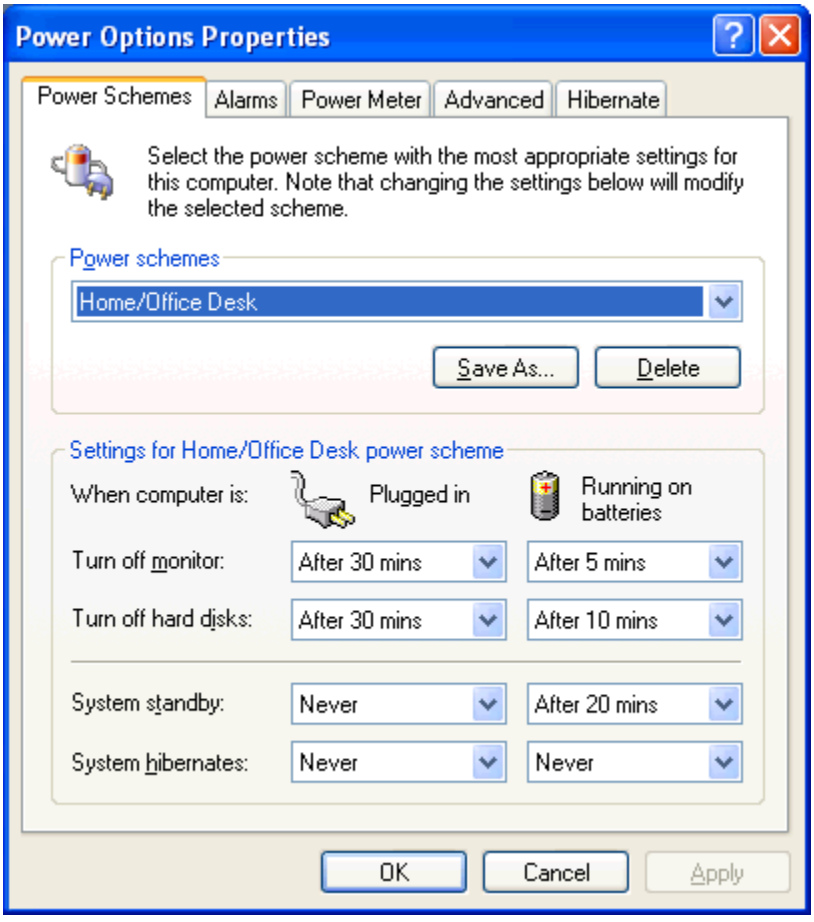
Overview

PwrSmart gives you control over when and how power is managed on your computers. It does this through *Power Schemes*. A power scheme defines three things:

1. Power options control panel settings;
2. Scheduled events (like shutdown);
3. Software exclusions.

Power Options

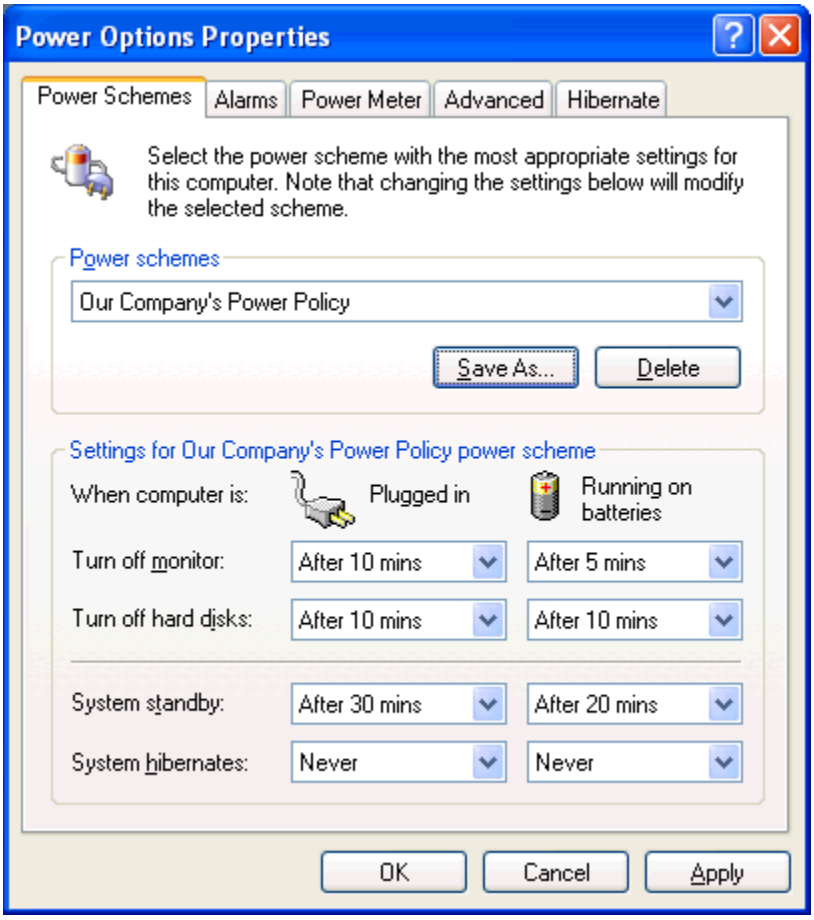
The power options control panel settings define how much idle time must occur before the displays and disks turn off or the computer goes into a low power state (standby or hibernate). The computer's power scheme can be viewed in the **Control Panel | Power Options**. The following screenshot shows the settings from a laptop (desktop computers will not show battery settings):



PwrSmart power schemes define specific, customizable power schemes that are enforced on target computers. For example, your company's power management practices might specify the following settings for a laptop when it is plugged in:

- Turn off monitor and hard disks after 10 minutes
- System standby after 30 minutes

After creating a power scheme to reflect these values and assigning the scheme to your company's computers, each computer's **Control Panel | Power Options** would look like this:



If the end user then changes the scheme or any setting on the **Control Panel | Power Options**, PwrSmart will automatically revert it back to the settings defined by your power scheme.

Scheduled Events

PwrSmart power schemes can optionally include scheduled events. These can be used to force machines to shutdown or hibernate at a particular time, or to wake up at a particular time, or to stay awake for a specified period of time.

Software Exclusions

PwrSmart power schemes can optionally include software exclusions. A software exclusion defines a particular process which, if running on the target machine, will prevent that computer from suspending due to idleness. Scheduled Events are also disabled when an excluded process is running.

Using PwrSmart

PwrSmart is easy and intuitive:

1. **Create groups** - organizational groups or dynamic PwrGroup groups - to which you will assign *power schemes*. This activity is described in the section on groups.
2. **Create/use/modify schemes** to reflect your corporate power management practices. PwrSmart comes pre-configured with several *schemes* that are ready to use. You can *modify those schemes* to match your needs, or you can *create new schemes*.
3. **Assign the schemes** to computers and/or groups. There are several ways to *assign schemes*, the simplest being to select the target then double-click the scheme you want to assign to the target.
4. **View energy savings results** to determine how much energy and money you are saving. Energy savings can be assessed on the *Energy Savings* tab.

PwrSmart Power Schemes

A PwrSmart Power Scheme consists of several facets:

1. **Name**: Every scheme must have a unique name. When a scheme is active on a computer, this name will appear in the computer's Power Options Control Panel.
2. **Description**: Optional description of the scheme.
3. **Priority**: The relative priority among schemes. Every scheme has a unique priority value. Lower priority values take precedence over higher values.
4. **Power Options**: These settings correspond to the Power Options Control Panel in Windows. These settings define what energy savings action to take after specified periods of idleness.
5. **Scheduled Events**: Events are specific actions, such as wake on LAN, shutdown, and hibernate, that should occur at specified times independent of machine idleness.
6. **Software Exclusions**: Exclusions define specific software executables which, if running, prevent the idleness events and scheduled events from occurring.

1. Each of these facets is explained in more detail in the he *Power Scheme Properites dialog* section.

Creating Power Schemes

You can create a Power Scheme in several ways:

- Press the **Create Scheme** icon  in the toolbar.
- Select the **Create Scheme** menu item by:
  - selecting it from the **Power Management** menu;
  - right-clicking on the **All Schemes** node in the Power Schemes tree;
  - right-clicking beneath the **All Schemes** grid.

Viewing and Editing Power Schemes

To view a Power Scheme, select the **Power Schemes** tab and then select the **Setup** subtab.

To view or edit a Power Scheme, open its **Properties** by:

- press the **Edit** button on the *Settings* subtab under the **Power Schemes** tab.

- right-clicking on a scheme in the Power Schemes tree;
- right-clicking on a scheme in the Schemes grid;
- selecting a scheme and choosing **Properties** from the **Edit** menu.

2. Once the Power Scheme Properties (or Create Power Scheme) dialog opens, you can easily modify its settings through the *Power Scheme Properites dialog*.

Deleting Power Schemes

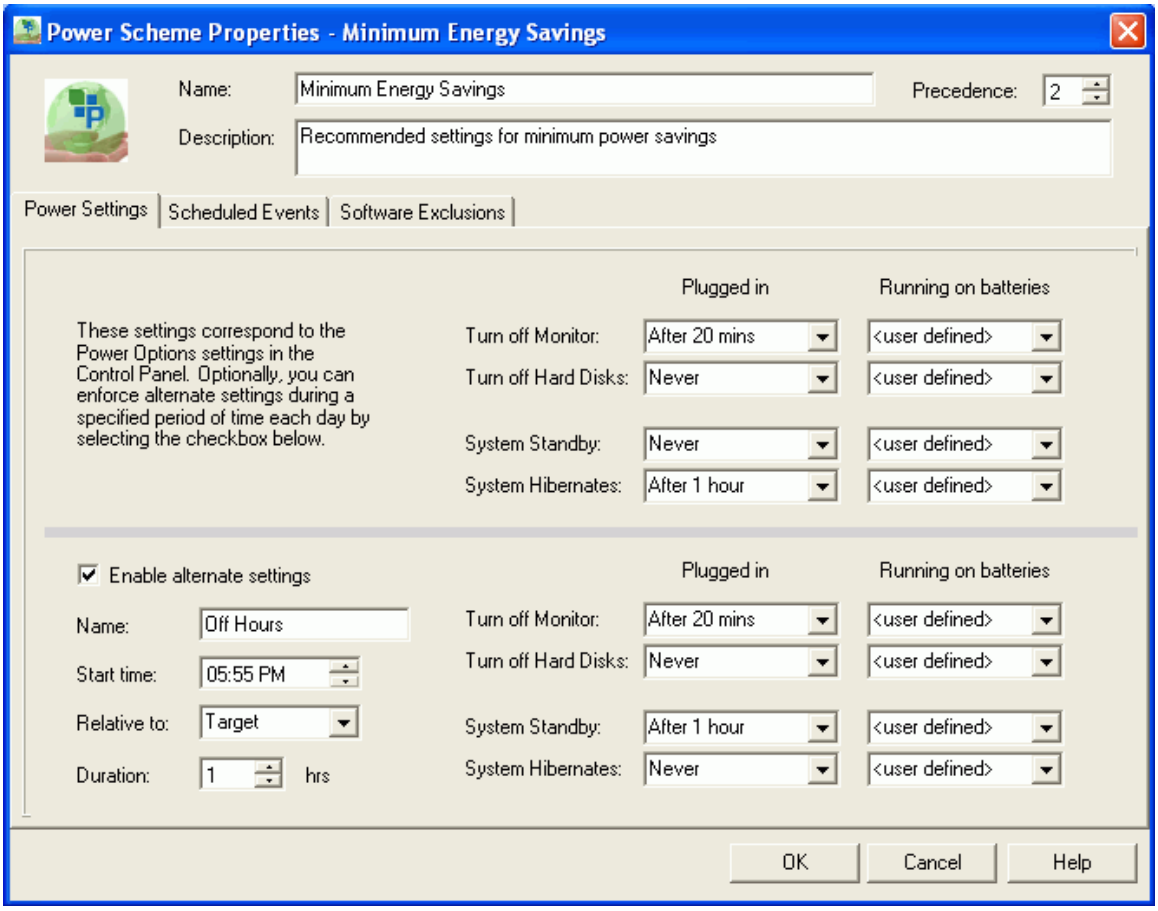
3. To delete a scheme:
    1. Select the **Power Schemes** tab.
    2. In the All Schemes tree, select the Scheme to be deleted.
    3. Right-click and select **Delete**. You can also select **Delete** from the **Edit** menu.
4. This will delete the scheme and all of its assignments to any computers or groups.

Settings tab

The **Settings** subtab shows the detailed settings for a scheme. If you select the **All Schemes** node, it shows summary information for all schemes (see *All Schemes* tab for more information).

When a scheme is selected, the panel is split into four areas: general settings, Power Options, Scheduled Events, and Software Exclusions. To edit any aspects, press the corresponding **Edit** button to open the *Scheme Properties* dialog where changes can be made to the scheme.

Power Scheme Properties Dialog



Use this dialog to define a *Power Scheme*.

This dialog box is displayed when you create a new Power Scheme or modify an existing Power Scheme. It opens when you select:

- The **Create Scheme** icon  in the toolbar.
- **Create Scheme** menu item
  - from the **Power Management** menu;
  - by right-clicking on the **All Schemes** node in the Power Schemes tree;
  - by right-clicking beneath a Schemes grid.
- **Properties** menu item for a selected scheme by:
  - right-clicking on a scheme in the Power Schemes tree;
  - right-clicking on a scheme in the Schemes grid;
  - selecting **Properties** from the **Edit** menu.

General Settings

The upper portion of this dialog allows you to specify the scheme's name, a description, and its *priority*.

Name

The name of the scheme. This name will appear in the end user's Power Options Control Panel as the current scheme name. This name is limited to 30 characters (this is enforced by the Windows operating system).

Description

An optional description of the scheme.

Priority

The scheme's *priority*. All schemes have a unique priority value. Only a single scheme can be active on a computer. However, a computer can belong to multiple groups. Therefore, several schemes may be assigned (either 0 or 1 directly, and any number indirectly, via groups). The priority dictates the "winner". A scheme with the lower priority number will be enforced rather than a scheme having higher priority value.

When creating a new scheme, the priority will be set to a default priority value. You can adjust the priority setting up or down. When saved, the priority values of other schemes will be adjusted accordingly so that each scheme has a unique value.

For example, if you create a new scheme whose default value is 3, and change it to 1, the other 2 schemes will have their priority values changed from 1 and 2 to 2 and 3.

Power Options Tab

This tab defines settings that correspond to the **Power Options Control Panel** in Windows. PwrSmart will enforce the settings you specify independent of end user action. The values available are the same as in the control panel, with one exception: <user defined> (see below).

The values specify how much system idle time must elapse before the energy savings action (e.g., turning off the monitor) occurs. Standby and hibernate both put the machine into a low energy state without affecting user sessions. Hibernate differs in that the user's session state is stored to disk instead of being kept in memory. While hibernate is more robust, it takes a little longer for a machine to come out of hibernation than from standby.

<user defined> Value

The special value "<user-defined>" means that PwrSmart permit will the end user to enter any value they choose for that parameter. It is a way of saying that the administrator "does not care" what value the user provides for a specific parameter. For example, a power scheme may allow laptop users to choose any settings they wish when they are running on battery power.

Alternate Settings

The lower panel of the **Power Options** tab allows you to specify alternate settings to use during a specific time period each day:

☑**Enable alternate settings**: With this option selected, PwrSmart will enforce the alternate settings instead of the settings defined above. This might be used, for example, to allow more liberal settings during the day and more conservative settings at night, or for any reason at all.

- **Name:** Provide a name for the alternate period. This name is shown on the **Power Management | Settings** tab.
- **Start time:** This is the time when you want to switch to the alternate settings.

- **Relative to:** The time can be relative to the target machine, the current (console) machine, or GMT.
- **Duration:** This is how long the alternate period should last.

☐ **Enable alternate settings**: With this option cleared, the power options defined in the upper panel are enforced 24 hours per day.

Tip The settings in either panel can be filled using the "quick fill" option available by right-clicking in one of the 2 panels. The quick fill options include seeting all fields to user-defined or Never, or to Windows default values or EPA recommended.

Scheduled Events

A scheduled event defines a particular action that should occur on the end user's machine and when it should occur. You can make a machine wake up, shutdown, standby, or stay awake.

A scheme can have any number of events. To add an event, press **Add**. To remove an event, select one or more and press **Remove**.

Events are defined by several settings:

- **Event Type:** The available event types are:
  - **Wakeup**: This is the **Wake on LAN** event. It can be used to wake up machines at a particular time.
  - **Stay Awake**: When this event occurs, the machine will stay awake for the specified duration independent of idleness.

  Note The Stay Awake event automatically generates a preceding Wake on LAN event to ensure the target machines are up.

  - **Shutdown**: This causes the machine to power off. A warning message will be displayed to the end user 60 seconds prior to shutting down.
  - **Standby/Hibernate**: These actions causes the machine to suspend. As with Shutdown, a warning message will be displayed to the end user 60 seconds prior to entering a standby/hibernate state.

  Tip There is *no significant difference in energy savings between shutdown, hibernate, and standby*. A computer in a shutdown state still consumes some energy, and consumes only slightly less energy than hibernate or standby. Unlike hibernate and standby, a shutdown destroys user sessions. And resuming from hibernate and standby is much faster than restarting a machine. Hence for energy savings, we recommend using hibernate and standby instead of shutdown.
- **Day:** The day of the week when it should occur. This can be a particular day, or weekdays, weekends, or all days.
- **Time:** When the event should occur.
- **Time Reference:** The time can be relative to the target machine, the current (console) machine, or GMT.
- **Duration:** For Stay Awake events, this defines how long the machine should stay awake. **This setting is not used for the other event types.**

Software Exclusions

Software exclusions are specific processes that, if running on the end user's machine, will de-activate the power options and events.

A scheme can have any number of exclusions. To add an exclusion, press **Add**. Then enter the name of the executable, for example `myprocess.exe`. To remove an exclusion, select one or more and press **Remove**.

Assigning Power Schemes

It's easy to assign Power Schemes to computers or groups:

1. Go to the **Managed** tab.
2. Select the target computer or group.
3. Select the *All Schemes* subtab.
4. Select the desired scheme by doing one of the following:
    1. Use the **Assign Scheme** menu option (by right-clicking or using the Power Management menu) to open the *Assign Scheme* dialog.
    2. Double-click the scheme.
    3. Select the scheme and press the **Assign** button
    4. Select the scheme and press the  icon in the toolbar.

When a computer is assigned a scheme, PwrSmart will apply that scheme on that computer. The computer's Power Options Control Panel will show the scheme name and the settings defined for that scheme. If the user changes the values, PwrSmart will set them back.

Unassigning a Scheme

There are several options for unassigning a scheme:

1. From the *All Schemes* subtab:
    1. Select the target computer or group
    2. Either:
        1. Open the *Assign Scheme* dialog; or
        2. Select scheme to unassign, and either click the **Unassign** button or double-click on the scheme.
2. From the **Assignments** subtab on the **Power Management** tab:
    1. Select the scheme to be unassigned.
    2. Select the assignment.
    3. Right-click and select **Delete Assignment**.

Assigning Through a Group

A computer can be assigned a scheme in several ways. It can be assigned a scheme *directly*, and it can be *assigned through a group* to which that computer belongs. Therefore, a computer (or group) may have multiple assignments:

- Either zero or one direct assignment for each computer or group. On the ***All Schemes*** subtab, with the computer or group selected, a directly assigned scheme will be marked as **Assigned**.
- Zero or more assignments through containing groups. When a scheme is assigned to a group, the scheme is assigned to all the computers and subgroups within it. On the ***All***

Schemes subtab, with a computer or group selected, these assignments will be marked as **Assigned through a group**.

For example, assume:

- Computer Bob belongs to group Sales
- Computer Bob has been directly assigned scheme *Maximum savings*
- Group Sales has been assigned a scheme *EPA recommended*

The computer Bob has 2 assignments: one direct (*Maximum savings*) and one through a group (*EPA recommended*). Which of these two schemes is enforced on Bob depends on which one has the lowest priority value, as described below.

This feature of being able to assign through a group provides the flexibility for you to easily enforce your power management practices across your organization. You can assign a single scheme to your top level groups, and thereby enforce power management across all computers in those groups. Or, you can assign a "default" power scheme to all computers through a top-level group, and then apply a more customized scheme to a subset of those computers by assigning a scheme to a specific sub-group.

Scheme Priority

Which scheme's settings are applied when a computer has multiple assignments? PwrSmart applies the scheme having the **lowest priority value**. All schemes have a unique priority value, hence there is no ambiguity as to which of the several assigned schemes will be applied.

In the previous example, if the *Maximum savings* scheme has priority 5 and *EPA recommended* has priority 2, then *EPA recommended* will be enforced on Bob.

The applied scheme for a selected computer is marked as **Active** in the *All Schemes* subtab.

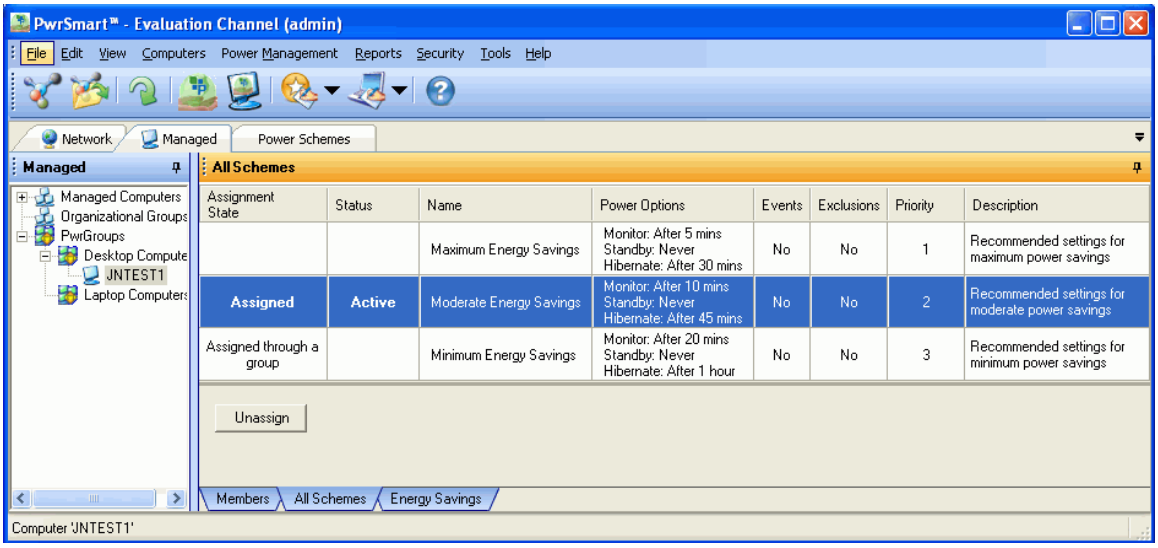
Note At most 1 scheme is active (applied) on a computer at any given time, even if the computer has multiple assignments. The scheme with the lowest priority value is the one that gets applied.

Viewing Assignments

There are three ways to view power scheme assignments.

1. **Assignments for a scheme**: Select the **Power Management** tab, then select the **Assignments** subtab. The panel shows all the assignments for the selected scheme. To see all assignments, select the All Schemes node in the tree.
2. **Assignments for a computer or group**: Select the **Managed** tab, then select the *All Schemes* subtab. The Assignment State column shows the assignments for the selected computer or group.
3. **Power Scheme Assignments report**: This report (available via the Reports menu and by right-clicking on a group or computer) shows all the assignments.

All Schemes tab



The **All Schemes** subtab under the **Managed** tab shows all the schemes in the channel and, if a target computer or group is selected, will show the assignment and status. It is from this tab that you assign schemes to computers and groups. This grid provides summary information about each scheme:

- **Assignment State**: This column (visible for computers and groups) indicates the current assignment status for the selected computer or group. Cells in this column may contain several values:
    - **Assigned**: This value indicates the scheme has been assigned directly to the selected target.
    - **Assigned through a group**: This value indicates the scheme is assigned to the selected target through a containing group.
    - **<Empty>**: If the cell is empty, it means that scheme is not assigned to the selected target, either directly or indirectly.
- **Status**: This column (visible for computers only) indicates if a scheme is **Active** (applied) on the selected computer. This will always appear on the assigned scheme having lowest priority value of all schemes assigned to that computer. However, it may or may not be the scheme directly assigned to that computer depending on priority values.
- The remaining columns summarize the scheme's settings. To get more detail about a scheme, right-click on the scheme and select *Properties*.

Assign/Unassign button

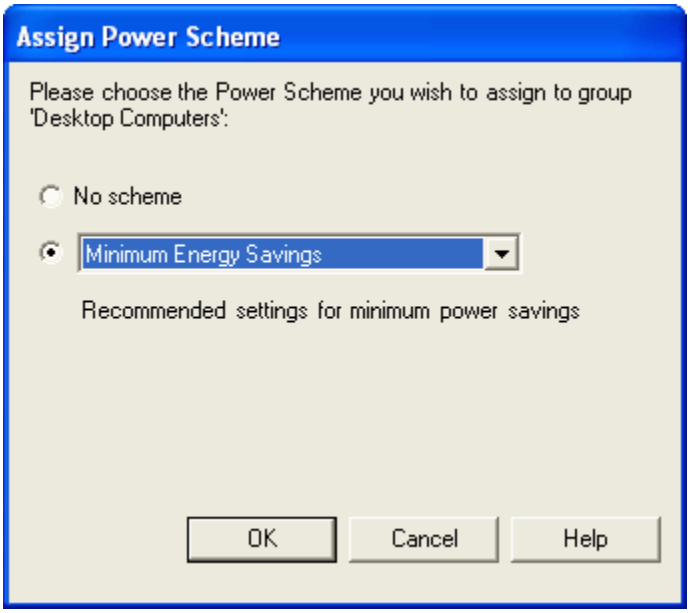
When a scheme is selected, use this button to assign or unassign the scheme.

Tip A scheme can also be assigned/unassigned by double-clicking on the scheme.

Right-click option

By right-clicking, you can open the *Power Scheme Properites* dialog.

Assign Scheme Dialog



Use this dialog to select a power scheme to assign to a particular computer or group.

This dialog box is displayed when you:

- press the  icon in the toolbar;
- select **Assign Scheme:**
  - from the **Power Management** menu;
  - by right-clicking on a computer or group on the **Managed** tab.

When opened, the current scheme assigned to the target, if any, will be shown in the dropdown list. If no scheme is assigned, "No scheme" will be selected.

Assigning

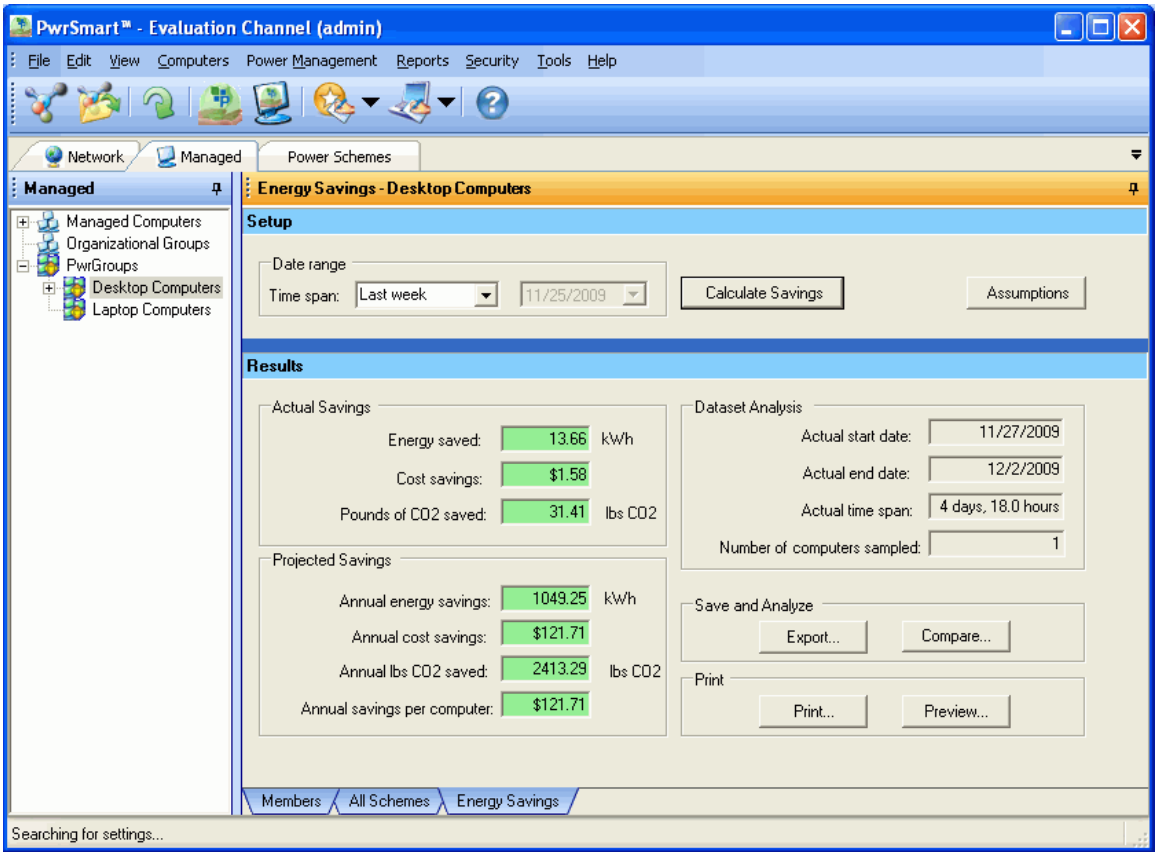
To assign a scheme, select the radio button next to the schemes dropdown list. Select a scheme from the dropdown list and press **OK**. This will assign that scheme to the designated target.

Unassigning

To un-assign a scheme, select the radio button labelled "No scheme" and press **OK**.

5. For more information on assigning power schemes, see the *Assigning Power Schemes* section.

Calculating Energy Savings



Using the Energy Savings tab, you can determine how much energy has been saved in a specific group or by a specific power scheme. The results include projected annualized savings, as well as annual savings per computer, which allows you to compare savings across groups and across schemes.

To calculate savings for a:

- **Computer or group**: Select the **Managed** tab and then the **Energy Savings** subtab.
- **Power scheme**: Select the **Power Management** tab and then the **Energy Savings** subtab.

Energy savings is computed based on the energy savings log. The energy savings log is a database log containing all occurrences of energy related events (shutdown events, standby events, etc.) across all managed machines. You can view this data in the **Report | Computer Reports | Energy Savings** report. Each entry includes the computer's ID, the event type, the off and on times, and the scheme active on that computer at that time.

Setup Panel

Date Range

In this area, specify the time range over which you wish to calculate energy savings. The range you pick depends on your objective, when schemes were applied, when computers joined the group, etc.

Time span: The time span can be specified in two ways:

1. **Last....**: This will extract the specified duration of data going back from mid-day of the current day.

2. **... starting**: This will extract the specified duration of data starting from the date specified using the calendar control.

> **Note** The database records available for analysis will depend on the settings defined in the Channel Properties | Maintenance tab. For example, if in the Maintenance tab you specify that only 30 days of data should be retained, then you can only calculate savings up to 30 days in the past.

Calculate Savings: Press this to calculate savings over the specified date range. The Results panel will be updated accordingly. The calculation can be done on any of three sources:

1. A computer: Only energy savings log entries involving the specified computer are included in the analysis.
2. A group: Only energy savings log entries involving computers *currently belonging to the selected group* are included in the analysis.

> **Note** Groups can dynamically change their membership. Therefore, take care in interpreting the analysis results for highly volatile groups.

3. A scheme: Only energy savings log entries involving the specified scheme are included in the analysis.

Assumptions: Press this to open the Channel Properties | *Power Management tab*. This is where you specify assumptions such as cost of energy and device wattages. Changing the assumptions will cause the Results panel to be refreshed. However, all previously generated results (associated with other targets or other date ranges) will be deleted. The *assumptions* influence the energy savings calculations. They define the types of events to include and how much energy to associate with each event.

Results Panel

This is where the results are shown after pressing the **Calculate Results** button or changing assumptions.

Actual Savings

This area displays the actual savings over the time range specified based on the specified *assumptions*.

Projected Savings

These are projected annualized savings based on time range reflected in the actual data. For example, if the actual time span of the dataset is 30 days, the annualized values will be approximately 12 times the actual values.

In addition, the **Annual savings per computer** is shown. It is the annualized cost savings divided by the number of computers sampled.

> **Tip** The **annual savings per computer** is a normalized value (normalized by time and computer count) and hence is the best value to use for comparisons among groups and schemes.

Dataset Analysis

This area displays information about the data actually sampled.

- **Actual start date**: The earliest date found in the sampled energy savings logs. This date may be later than the start date specified by the **Time span** setting in the **Setup** panel, depending on the actual events recorded.

- **Actual end date**: The latest date found in the sampled energy savings logs. This date may be earlier than the end date specified by the **Time span** setting in the **Setup** panel, depending on the actual events recorded.
- **Actual time span**: The difference between actual start and end dates.
- **Computers sampled**: The actual number of computers in the sampled energy savings logs. This may be less than expected for the selected target:
    - Computer: This will be 0 if there are no log entries for that computer over that time, either because the computer did not have a scheme assigned, or did not have any energy saving events, or those events were filtered out of the results.
    - Group: This will be between 0 and the number of computers currently in the group. It may be less than the number of computers in the group if the group does not have a scheme assigned and only some of the computers have a scheme assigned directly or via another group (see Tip below).
    - Scheme: This will can be any number, depending on how many computers were running that scheme and made log entries during the specified time range.

Tip Use the **Computer Power Schemes** *Energy Savings Report* to determine:
- For a group, how many computers in that group are actively applying a scheme;
- For a scheme, how many computers are actively applying that scheme.
Refer to *Energy Savings Reports* for more information.

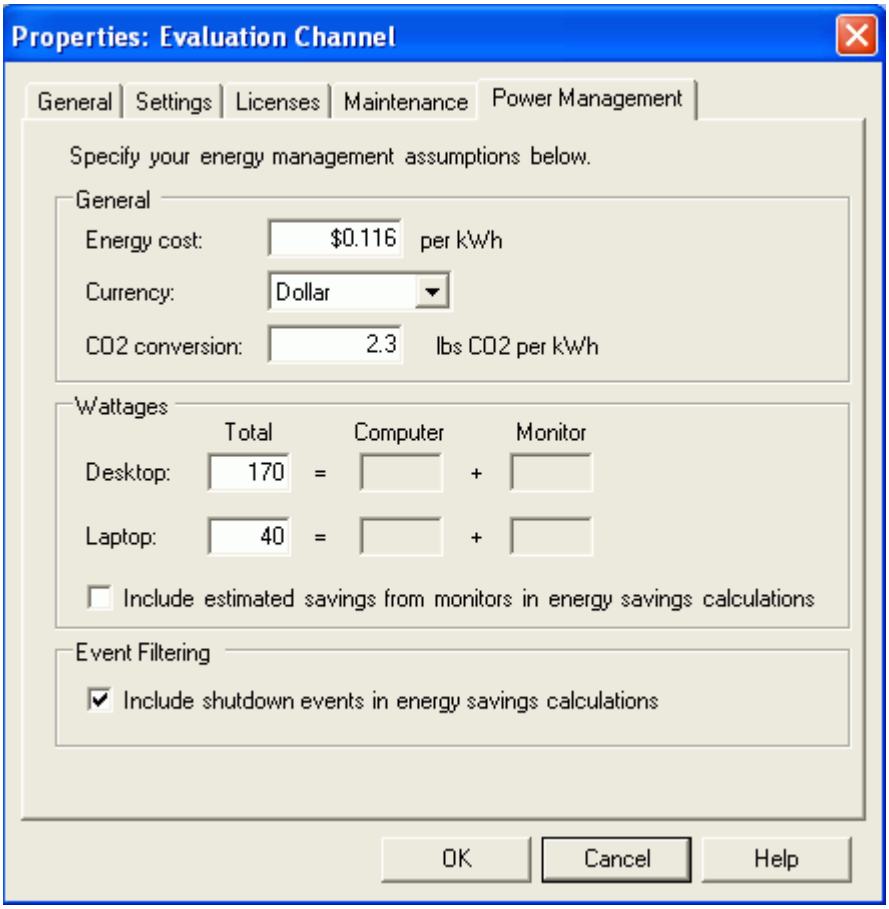
Save and Analyze

- **Export**: Exports the analysis to a text file.
- **Compare**: Opens the *Compare Energy Savings Analyses* dialog, which allows you to compare 2 different energy savings calculations.

Print

- **Print**: Print the current analysis.
- **Preview**: This displays the print preview dialog for the current analysis. You can print directly from this dialog.

Power Management tab (Channel Properties)



Use the **Channel Properties** | **Power Management** tab to define assumptions for energy management calculations.

Note Changing assumptions will delete all of the current energy savings calculations.

This dialog box is displayed when you choose **File | Channel Properties** then click on the **Power Management** tab. It also opens when you select **Assumptions** from the **Power Management** menu or by pressing the button on the *Energy Savings* tab.

General

- **Energy Cost**: Enter the cost per kWh to be used in energy savings calculations. This will vary by country and region as well as time of year.
- **Currency**: Select the currency to use for energy savings calculations.
- **CO2 conversion**: Enter the CO2 conversion factor. This is primarily a function of the energy source use in your region. For example, natural gas might be 0.185 kg/kWh, while industrial coal is 0.330 kg/kWh. The units are kilograms except in the U.S., where the units are pounds ("lbs").

Wattages

In this area, you specify the average wattage consumed for desktops and laptops, and, if desired, monitors. All desktop computers in your channel will be assumed to have the specified desktop wattage, while all laptops are assumed to have the specified laptop wattage.

☑ **Included estimated savings from monitors**: Checking this allows you to incorporate into your energy savings calculations an estimate of the energy savings from the monitors being turned off in advance of computers entering a standby state.

For example, if the monitor shuts off after 20 minutes of idle time and the computer enters standby after 60 minutes, there is a 40 minutes period where the monitor was off prior to the computer entering standby. Assuming the monitor consumes 45 watts, this saves an additional:

(40 min / 60 min) * 45 watts / 1000 = 0.03 kWh

every time the computer enters a standby state.

With this option checked, you can enter separate values for the monitor wattage and the computer (chassis) wattage. The sum of these two values is the device's total wattage.

Note Energy savings when the computer is in a standby or shutdown state *always* includes savings for the monitor in addition to the computer - i.e., the total wattage for the device type - regardless of whether this checkbox is checked or not. This checkbox concerns only the time when the computer is not yet in a standby/shutdown state.

☐ **Included estimated savings from monitors**: When this is unchecked, savings from monitors being turned off prior to the computer entering standby will not be included in the report. When unchecked, the only wattage value you can specify for desktops and laptops is total device wattage.

Event Filtering

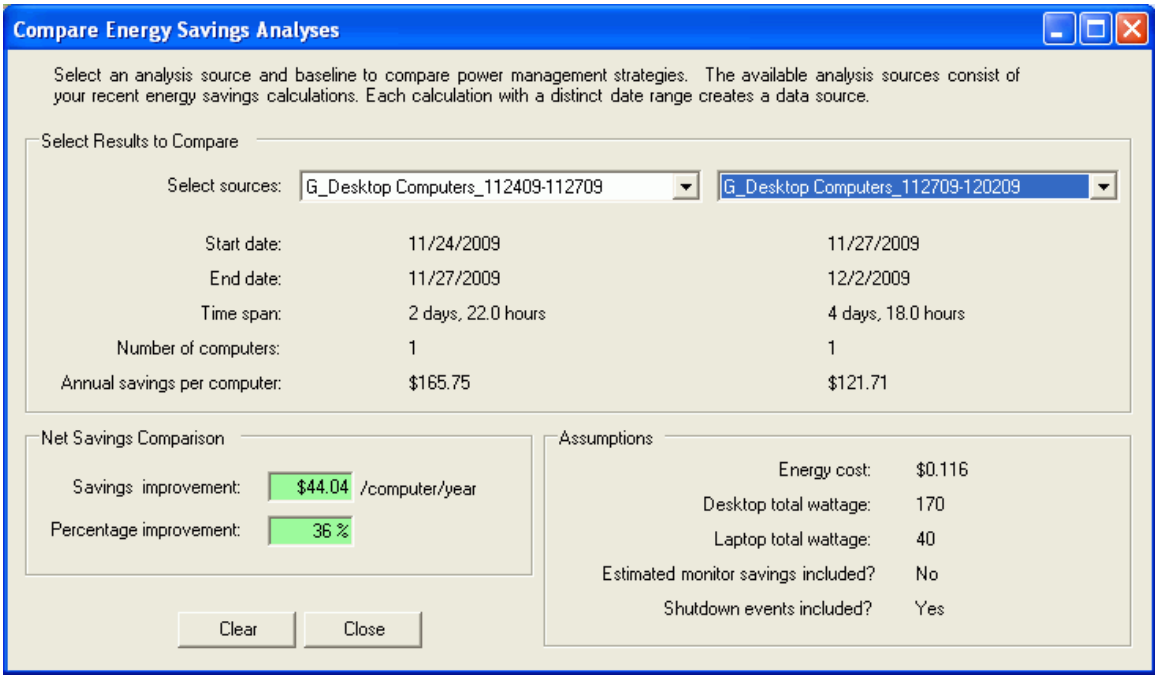
This section defines what events will and will not be included in the energy savings calculations. There are two types of events recorded by PwrSmart: shutdown events and standby events. The latter events are either hibernate or standby events.

☑ **Included shutdown events**: With this option checked, energy savings calculations will include shutdown events in addition to standby events in the energy savings calculations. This will never decrease but may increase the calculated energy savings. Check this, for example, if the schemes include a shutdown event every evening.

☐ **Included shutdown events**: With this option cleared, shutdown events will not be included in energy savings calculations. Only standby events will be included. Depending on the nature of the power schemes defined and your energy management objectives, it may not be accurate to include shutdown events in your calculations.

Note In addition to this option, PwrSmart automatically filters out all events of short duration (less than 4 minutes). Such events do not contribute noticeably to energy savings, and often indicate that a machine tried to enter a standby state but was unsuccessful for some reason.

Comparing Energy Savings



This dialog allows you to compare the energy savings analysis across different groups, schemes, or time frames. Every time the **Calculate Savings** button is pressed, the results are saved for use in this dialog.

Select Results to Compare

In this panel, select the two results to be compared. Each result is uniquely identified in this dropdown by

- a prefix indicating the type of source (C_ for computer, G_ for group, S_ for scheme), or no prefix if the source is a root node (e.g., Managed Computers).
- the source object (scheme name, group name, etc.).
- the specified start and end dates in "mmddyy" format.

The result summary for each selected result is shown beneath the selection.

Net Savings Comparison

This panel shows the difference in cost savings and percentage improvement.

Assumptions

This panel shows the current *assumptions*, such as energy cost.

Note All saved results are erased when the assumptions are changed.

Energy Savings Reports

Energy Savings reports are located on the **Reports | Computer Reports** menu. They include:

Computer Power Schemes: Shows the currently active scheme on each computer. Note that the active scheme may not be the same as the directly assigned scheme (see *Assigning Power Schemes* for more information). Use the **Computer Power Schemes** report to determine:

  - How many computers in a particular group are actively applying a scheme. To do this, select the group, right-click, select **Reports > Computer Reports > Computer Power Schemes**. This will show, for each computer in the group, the active scheme (or blank, if no scheme is active). By grouping by scheme, you can also determine which schemes are active within the group, and how many computers in the group have no scheme assigned.
  - How many computers are actively applying a particular scheme. To do this, from the Main menu, select **Reports > Computer Reports > Computer Power Schemes**. Then filter by the desired scheme.
- **Energy Savings**: The Energy Savings report shows shutdown/suspended events for each managed computer over a default period of 30 days. For each event, it shows when the event occurred and, depending on the event, shows the wake time and duration of the powered down state.
- **Power Scheme Assignments**: This shows all the power scheme assignments.
- **Summary of Energy Savings**: This shows savings by group.