



ShorePowerCalc User Guide

Single Panel, Multi Panel, and Large MDP & Substation Marina Workflows

Version 2.2.0 | Guide revision: July 26, 2026

Marina electrical planning, calculation, schedules, and one-line documentation
Southern Electrical Solutions

ShorePowerCalc is a Windows desktop application for organizing marina electrical inputs, applying the selected shore-power demand basis, reviewing panel and MDP loading, and producing coordinated schedules, tagged one-lines, and PDF calculation reports across three marina distribution modes.

The screenshot displays the ShorePowerCalc application interface. At the top, the header bar includes the ShorePowerCalc logo, the text 'Marina electrical planning and calculation', the project name 'Untitled Marina', and a status indicator 'Saved | Not calculated'. An 'Export PDF' button is located in the top right corner. Below the header is a seven-step workflow navigation bar with tabs labeled 1 Project, 2 Distribution, 3 Pedestal Circuits, 4 Boat Lifts, 5 Other Loads, 6 Results, and 7 One-Line. The 'Project' tab is currently selected. The main content area is titled 'PROJECT SETUP' and 'Calculation Basis', with a subtitle 'Define the marina, code basis, and project workflow before entering distribution equipment.' Below this, the 'Project Information' section contains several input fields and dropdown menus: 'Project Name' (Example Marina), 'Project Address' (123 Marina Way, Coastal City, ST 12345), 'Prepared For' (Example Marina Owner), 'Prepared By' (Southern Electrical Solutions), 'Marina Basis' (Existing marina / modification), 'NEC Edition' (2026 NEC), '2023 Docking-Facility Feeder Installation' (Unknown - classify before relying on 2023 feeder GFPE result), and 'Project Mode' (Single Panel Marina).

Figure 1. ShorePowerCalc v2.2.0 project header, seven-step workflow, and project information.

Important notice

ShorePowerCalc is an informational calculation and documentation aid. It is not engineering advice, does not exercise professional judgment, and does not create sealed, permit-ready, procurement-ready, construction-ready, or energization-ready documents. Official adopted codes, local amendments, utility requirements, equipment listings, manufacturer instructions, project specifications, and field conditions always control.

Every input, output, warning, conductor or raceway result, phase assignment, voltage-drop value, grounding and bonding detail, transformer selection, and protective-device value must be independently checked for the specific project before use.



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ShorePowerCalc v2.2.0 | Windows desktop release | Project files: .mlc | Guide revision: July 26, 2026

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1. Install, Activate, And Accept The EULA

Install ShorePowerCalc with the Setup file, or run the Portable file from a location where Windows permits the app to write its local data. The customer release requires a valid Gumroad license key and internet access for activation and periodic verification.

Activate ShorePowerCalc

Enter the Gumroad license key from your receipt and accept the EULA to unlock the app on this computer.

END USER LICENSE AGREEMENT (EULA)
ShorePowerCalc v2.2.0
Vendor: Southern Electrical Solutions (SES)
Effective Date: 2026-07-26

IMPORTANT: READ CAREFULLY. BY SELECTING THE EULA AGREEMENT CHECKBOX AND THEN SELECTING "ACTIVATE & ACCEPT" OR "ACCEPT UPDATED EULA," OR BY INSTALLING OR USING THE SOFTWARE AFTER THAT ACCEPTANCE, YOU AGREE TO BE BOUND BY THIS EULA.

1. DEFINITIONS

"Software" means the ShorePowerCalc desktop software, including its executable files, updates, documentation, and related materials.

"You" or "Licensee" means the person or entity that obtains a license to use the Software.

"Device" means one physical or virtual computer.

"License Term" means the 365-day period beginning on the Gumroad purchase date returned by Gumroad for the license key.

"Branded Reports Add-On" means the separately purchased ShorePowerCalc feature entitlement that permits supported PDF reports to use Licensee-provided company identity, logo, contact information, credential, and colors.

"Branded Report" means a supported PDF report generated by the Software while a valid Branded Reports Add-On entitlement and an active ShorePowerCalc base license are both present.

Gumroad License Key:

YOUR-GUMROAD-LICENSE-KEY

Name:

Customer Name

Email:

customer@example.com

Figure 2. Enter the Gumroad license key, customer name, and email; review the displayed EULA; select the electronic-signature agreement; then choose Activate and Accept.

License and activation notes

- A customer license is valid for 365 days from the Gumroad purchase date. Reinstallation does not restart the term.
- Keep Windows automatic date and time enabled. The app locks if the clock appears to have been moved backward or the saved license record fails its integrity check.
- The local license record and its separate random integrity key are protected by Windows secure storage. They must remain together. Upgrading from an earlier build may require one online verification to refresh them.
- A changed EULA requires affirmative re-acceptance. Re-acceptance does not consume another Gumroad activation.
- Keep the Gumroad receipt and license key with the purchaser's business records.
- Do not share, resell, publish, or distribute the license key, executable files, project source, or protected documentation.



2. Safety, Scope, And Required Review

Use ShorePowerCalc to organize marina inputs and produce planning-level load calculations, schedules, voltage-drop information, tagged feeders, and one-line report graphics.

Before using any output for permitting, procurement, construction, installation, or energizing, have all inputs, assumptions, equipment selections, grounding and bonding, GFCI/GFPE decisions, and final documents independently reviewed and approved for the specific project and jurisdiction.

ShorePowerCalc is not represented as having been independently certified, listed, sealed, or reviewed by an electrical engineer, testing laboratory, utility, or authority having jurisdiction. The review requirement above applies to the specific project and installation, not to a claim that the software itself has received professional approval.

The app can help with

- User-entered shore-power receptacle demand and accessory loads.
- Single Panel, Multi Panel, and Large MDP and Substation distribution calculations.
- Boat-lift motor loads, controller-supply planning values, and motor-feeder OCPD review.
- Other user-calculated marina loads added at 100% with planning branch-circuit values.
- Planning conductor, breaker, EGC, conduit, voltage-drop, schedule, and one-line outputs.

The app does not

- It does not certify NEC compliance or local-code compliance.
- It does not perform fault-current, coordination, arc-flash, transformer inrush, utility, corrosion, or manufacturer-specific studies.
- It does not select, set, locate, or coordinate GFPE/GFCI devices.
- It does not replace the listed lift-controller OCPD, equipment markings, manufacturer instructions, or a selective-coordination review.
- It does not produce stamped engineering drawings.

Report item	What to check before relying on it
Demand and current	Verify receptacle counts, voltage selection, pedestal layouts, the project sub-meter default, and every row-level sub-meter override.
Conductors, raceways, and breakers	Check final feeder, service, neutral, parallel conductor, raceway, EGC, and OCPD selections against the actual equipment listings, project documents, adopted code, utility requirements, and inspecting-authority requirements.
Voltage drop	Confirm actual routing lengths, looped pedestal distances, conductor material, and installation conditions.
GEC/EGC values	Treat as calculation aids. Grounding, bonding, corrosion, and separately derived system requirements need project review.
One-line diagrams	Use as a planning diagram only. Do not use as stamped construction documents.



3. Seven-Step Workflow

V2.2.0 uses the same seven tabs for every project mode. Complete the tabs from left to right; use the equipment selectors inside Pedestal Circuits, Boat Lifts, and Other Loads instead of returning to Distribution whenever you change panels or substations.

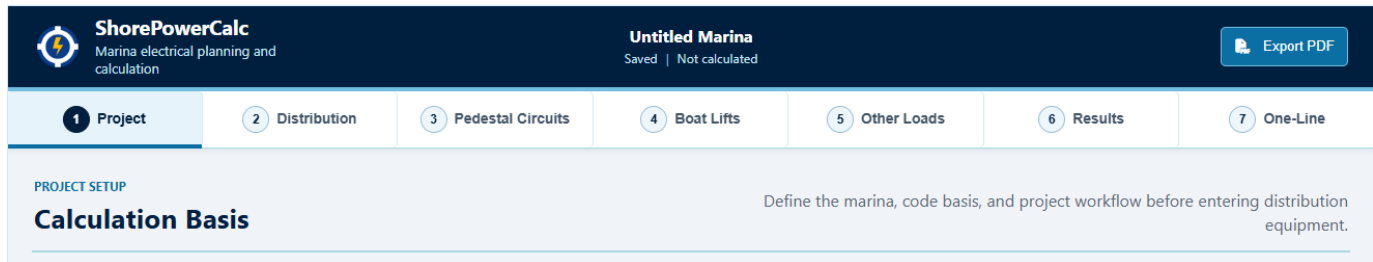


Figure 3. The workflow tabs are Project, Distribution, Pedestal Circuits, Boat Lifts, Other Loads, Results, and One-Line.

Recommended sequence

- Project: enter the project basis and choose a marina mode.
- Distribution: define the panel, low-voltage MDP and dock panels, or 480V MDP and substations.
- Pedestal Circuits: select the serving equipment and enter shore-power pedestal circuits.
- Boat Lifts: select the serving equipment and enter lift-controller and motor loads.
- Other Loads: select the serving equipment and enter already-calculated non-shore-power loads.
- Choose Calculate Project at the end of Other Loads, then review Results and all warnings.
- Review One-Line, then use Export PDF in the upper-right header.

Open, Save, and Save As are under the application File menu. Save a new project once to choose its .mlc location; after that, moving between workflow tabs automatically saves the current project. Help contains the complete Assumptions and Notes and the EULA.



4. Project Tab

Project Information applies to every mode and appears in the saved project and exported report.

i Project Information

Project Name:

Project Address:

Prepared For:

Prepared By:

Marina Basis:

NEC Edition:

2023 Docking-Facility Feeder Installation:

Project Mode:

Figure 4. Enter the project name, full address, Prepared For, Prepared By, Marina Basis, NEC edition, and Project Mode.

Field notes

- Prepared For, Prepared By, and Marina Basis improve project identification but do not change calculations.
- NEC Edition controls the code-basis label and selected-edition marina demand-table references. Verify the locally adopted edition, effective date, errata, amendments, and AHJ requirements.
- Project Mode controls the Distribution workflow and available MDP-direct choices.
- The Pedestal Circuits tab contains the Individual Sub-Meters project default and each row's inherit/Yes/No override, where the qualifying shore-power circuits are defined.



4. Project Tab, Continued

Optional Branded Reports add-on

Branded Reports is a separate \$59.99 one-time add-on for replacing ShorePowerCalc and Southern Electrical Solutions identity elements in supported PDF reports with the customer's company identity. It has its own Gumroad license key and does not include, extend, or renew the base ShorePowerCalc license.

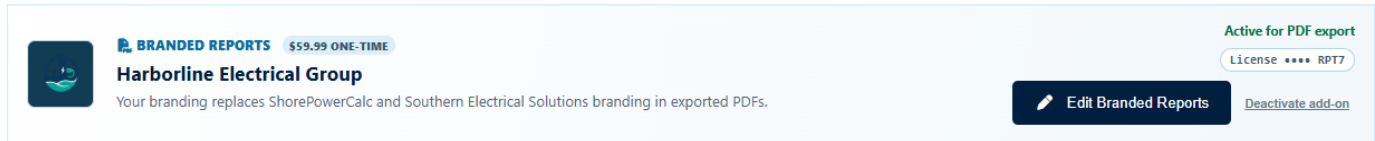


Figure 5. An activated and configured Branded Reports card shows the company profile currently used for PDF export.

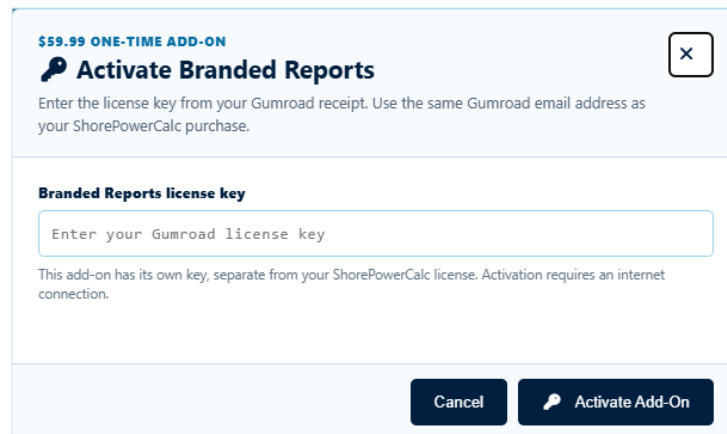


Figure 6. Activate the add-on with the separate Branded Reports key from its Gumroad receipt.

- Activate the regular ShorePowerCalc license first. Branded Reports works only while that base license remains active.
- Purchase and activate the add-on with the same normalized Gumroad email address used for the base ShorePowerCalc purchase.
- Do not enter the base ShorePowerCalc key in the add-on dialog or the Branded Reports key in the base-license dialog.
- The add-on has no separate annual expiration, but it is checked online periodically and remains subject to the validity of its Gumroad purchase.

4. Project Tab, Continued

Set up and review the report identity

PDF Color Theme

Choose a ready-made palette or adjust individual report areas. The live guide shows where every color appears.

Professional Blue
Traditional technical report

Black + Electric Blue
Bold, high-contrast branding

Charcoal + Amber
Warm industrial palette

Forest + Teal
Calm coastal palette

Burgundy + Copper
Traditional premium palette

Header & table backgrounds
Top report banner and table column headings.

#123B54

Accent bars & markers
Header stripe, section markers, and information-note markers.

#A65F00

Headings & key values
Page titles, section titles, and calculation-card values.

#123B54

Body text
Paragraphs, schedules, and normal report content.

#263746

Secondary text & footer
Project subtitles, detail text, and page footers.

#586875

Fine-tune backgrounds and borders
Optional controls for the lighter report surfaces.

Custom colors

Harborline Electrical Group

MARINE POWER PLANNING & FIELD COORDINATION

CALCULATION REPORT

Calculation Report

Project name and report subtitle

Section heading

Field	Reported value
Project item	Normal report text
Calculated item	Alternating row

Information note
Supporting report detail appears here.

Secondary text and page footer

Live color-location guide. Header and table text automatically switch between black and white for contrast. Paper, cards, and technical warning colors remain fixed for readability.

Figure 7. The branding editor provides ready-made palettes, individual color controls, a contrast check, and a live color-location preview.

- A transparent PNG is preferred. Use approximately 1200 x 500 px for a wide logo or 512 x 512 px for a square mark. PNG and JPEG files up to 5 MB are accepted.
- The report fits the logo proportionally without stretching or cropping it. Very wide or tall artwork may appear smaller so the complete mark remains visible.
- Choose a ready-made palette or adjust individual colors. Use the live location guide and contrast result to confirm where each color appears and that report text remains readable.
- Save the profile, export a sample PDF, and inspect every page before sending a branded report to a customer.
- When prompted, choose Verify Online to recheck the saved add-on. Use Standard Reports explicitly switches PDF export back to ShorePowerCalc identity while keeping the company profile.
- Deactivating the add-on removes its local activation from this computer and preserves the saved company profile for later reactivation.

If customer branding is still enabled but the add-on or base license cannot be verified, PDF export fails closed and no report is created. ShorePowerCalc does not silently substitute standard branding. Verify or reactivate the required license, or explicitly choose Use Standard Reports before exporting.



5. Choose The Marina Type

Mode	Use when	Distribution modeled
Single Panel Marina	A small marina has one panel feeding pedestal circuits.	One service/panel with pedestal circuit rows.
Multi Panel Marina	A low-voltage MDP feeds several dock panels.	Low-voltage MDP, dock-panel feeders, phase loading, and each dock panel's pedestal circuits.
Large MDP & Substation Marina	A larger marina uses 480V distribution and marine substations.	480/277V MDP, 480V single-phase substation feeders, substations, and downstream pedestal panels.

Choose the simplest mode that accurately matches the project distribution boundary. Do not use Large MDP and Substation Marina unless the project actually includes the modeled 480V MDP and marine-substation arrangement.

Mode boundaries

- Single Panel Marina starts at one panel feeding the pedestal circuits.
- Multi Panel Marina starts at a low-voltage MDP/switchboard feeding multiple dock panels.
- Large MDP & Substation Marina starts at a 480/277V landside MDP/switchboard feeding marine substations.
- Multi Panel and Large Marina projects may also contain direct MDP pedestal, boat-lift, and other-load branches where supported by the serving voltage.



6. Distribution - Single Panel Marina

Use Single Panel Marina for smaller projects where one panel directly feeds the pedestal circuits.

 **Single Panel Distribution**

Model one marina panel feeding the pedestal circuits. Enter the source and service information here, then build the pedestal circuit table below.

Panel Name:	Main Dock Panel		
Upstream Connection:	Service conductors to service equipment	Source Distance (ft):	75
Voltage:	120/240V		
Source Conductor Material:	Copper	Source Raceway:	PVC Schedule 80
Ambient Temperature:	26-30 C		

Figure 8. Single Panel Distribution contains the source-conductor and panel information for the one panel.

Enter

- Enter the panel name and source distance.
- Select the voltage, source-conductor material, PVC Schedule 40 or Schedule 80 raceway, and ambient temperature.
- Select the Upstream Connection that actually supplies the panel: Service Conductors, Feeder, or Transformer Secondary to First Disconnect (SDS). This selection changes the grounding, bonding, and conductor-sizing rule reported for the source segment.
- For an SDS source, enter the customer-owned transformer primary voltage, actual primary OCPD, and the supported NEC 240.21(C) 10 ft or 25 ft secondary-conductor rule. The entered source distance must remain within that rule's limit, and every condition of the selected rule must be independently confirmed.
- Continue to Pedestal Circuits. There is no separate calculation button on the Distribution tab.

Use this mode when there is no upstream dock-panel list and no 480V substation distribution to model.



7. Distribution - Multi Panel Marina

Use Multi Panel Marina when a low-voltage MDP or switchboard feeds multiple dock panels and each dock panel feeds shore-power pedestal circuits.

Multi Panel Distribution

Model a low-voltage MDP or switchboard feeding multiple dock panels. Edit the selected dock panel with the pedestal circuit table below; changes are saved automatically as you move through the marina setup.

MDP Name:

MDP Source Distance (ft):

MDP Ambient Temp:

MDP Upstream Connection:

MDP Wire Material:

MDP Voltage:

MDP Raceway:

+ Add Dock Panel

Dock Panel			
Dock Panel 1			
Dock / Area			
Dock 1			
MDP Distance (ft)	Panel Voltage	Auto Phase	
75	120/240V, 1 Phase	-	
Demand	Feeder	Delete	
-	Pending calculation	Delete	

Figure 9. Enter the MDP data, add each dock panel, and define its area, MDP distance, and panel voltage.

Workflow

- Add one row for every downstream dock panel included in the calculation boundary.
- Select the MDP Upstream Connection as Service Conductors, Feeder, or Transformer Secondary to First Disconnect (SDS). The choice controls whether the MDP source segment reports service grounding, a load-side feeder EGC and isolated neutral, or SDS grounding and bonding.
- For an SDS-supplied MDP, enter the customer-owned transformer primary voltage, actual primary OCPD, and supported NEC 240.21(C) 10 ft or 25 ft rule; the MDP source distance must stay within the selected rule.
- The Edit command selects a dock panel, but downstream tabs also provide their own selectors to prevent editing the wrong panel.
- MDP Direct appears first in downstream selectors for loads that originate at the low-voltage MDP.
- MDP demand is calculated from all downstream shore-power receptacles, lift allocations, and other loads; it is not a simple sum of dock-panel demand values.



8. Distribution - Large MDP And Substation Marina

Use this mode for a 480/277V landside MDP/switchboard feeding 480V single-phase marine substations with 120/240V single-phase secondary pedestal panels.

Large MDP & Substation Distribution

Model the landside MDP/switchboard feeding 480V single-phase marine substations. Edit the selected substation with the pedestal circuit table below; changes are saved automatically as you move through the marina setup.

MDP Name:

MDP-1

MDP Voltage:

480/277V, 3 Phase

MDP Wire Material:

Copper

MDP Ambient Temp:

26-30 C

MDP Upstream Connection:

Service conductors to service equipment

MDP Source Distance (ft):

250

MDP Raceway:

PVC Schedule 80

Substation kVA Presets:

75, 112.5, 150, 225, 300, 330, 500

+

Add Substation

Substation

Marine Substation 1

Dock / Area

Dock 1

MDP Distance (ft)

250

Selected kVA

330

Secondary Material

Copper

Secondary Arrangement

Secondary Length (ft)

Auto Phase

-

Figure 10. Enter the MDP data, editable substation kVA presets, and each substation's dock/area, MDP distance, and selected kVA.

Workflow

- Add one row for each marine substation or dock area included in the MDP calculation boundary.
- Select the MDP Upstream Connection as Service Conductors, Feeder, or Transformer Secondary to First Disconnect (SDS). The choice controls the source-segment conductor, raceway, grounding, and bonding basis.
- For an SDS-supplied MDP, enter the customer-owned transformer primary voltage, actual primary OCPD, and supported NEC 240.21(C) 10 ft or 25 ft rule; the MDP source distance must stay within the selected rule.
- Substation kVA selection is a planning aid; transformer losses, inrush, impedance, manufacturer data, and separately derived system details require separate review.
- Automatic phase balancing assigns single-phase substation feeders across A-B, B-C, and C-A.
- The utility transformer is outside this calculation boundary.

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9. Pedestal Circuits

The pedestal editor is shared by all three modes. In Multi Panel and Large Marina modes, always use the selector at the top of the tab to confirm which dock panel, substation, or MDP is being edited.

Ckt ID	Pedestal Side 1	Pedestal Side 2	Individual kWh Sub-Meters	Installation Type	Wire Material	Distance (ft)	Delete
Ckt 1	30A	30A	Project Default	Sch40-THWN-2	Copper	60	Delete
Ckt 2	30A	30A	Project Default	Sch40-THWN-2	Copper	60	Delete
Ckt 3	30A	30A	Project Default	Sch40-THWN-2	Copper	60	Delete
Ckt 4	30A	30A	Project Default	Sch40-THWN-2	Copper	60	Delete
Ckt 5	50A + 30A	None	Project Default	Sch40-THWN-2	Copper	110	Delete
Ckt 6	50A + 30A	None	Project Default	Sch40-THWN-2	Copper	110	Delete

Figure 11. Each row defines a circuit ID, pedestal-side receptacle layouts, installation type, wire material, and route distance.

PEDESTAL SCHEDULE

Shore Power Pedestal Circuits

Enter the slip pedestal arrangements, feeder circuits, wiring method, conductor material, and route distances.

Editing Dock Panel:

DP1 - Dock Panel 1 - Dock 1

Multi Panel Marina

Selected Dock Panel Pedestal Circuits

Individual Sub-Meters: Yes

+ Add Circuit

Reset Selected Circuits & Lifts

Ckt ID	Pedestal Side 1	Pedestal Side 2	Individual kWh Sub-Meters	Installation Type	Wire Material	Distance (ft)	Delete
Ckt 1	30A	30A	Project Default	Sch40-THWN-2	Copper	50	Delete
Ckt 2	30A	30A	Project Default	Sch40-THWN-2	Copper	50	Delete

Figure 12. The equipment selector changes the active dock panel without returning to Distribution. MDP Direct is the first choice in Multi Panel and Large Marina modes.

Entry rules

- Set the Individual Sub-Meters control to the project default, then use each pedestal row's inherit/Yes/No selection to match the actual metering at that location. A row-level selection overrides the project default.
- If a same-slip boat lift governs the Note 3 comparison, select Sub-meter covers complete lift circuit only when the same individual kWh meter measures both the shore-power receptacle and the complete lift-controller circuit. Without that confirmation, the calculation scope does not qualify for the facility multiplier.
- Reusing a circuit ID identifies multiple pedestal rows on one looped feeder.
- For looped feeders, enter the panel-to-first-pedestal distance and then each segment distance unless an entry is explicitly identified as a total run.
- Use Custom only when a standard receptacle layout does not describe the pedestal.
- In Large Marina mode, selecting the MDP opens the MDP-Fed Large Pedestal editor for direct 480V or 277/480V three-phase receptacles.



10. MDP-Fed Large Pedestals

Large Marina mode provides a dedicated editor for 100A and 200A 480V or 277/480V pin-and-sleeve shore-power receptacles fed directly from the MDP rather than a marine substation.

PEDESTAL SCHEDULE

Shore Power Pedestal Circuits Enter the slip pedestal arrangements, feeder circuits, wiring method, conductor material, and route distances.

Editing MDP: MDP - MDP-1 - MDP Direct Large MDP & Substation Marina

MDP-Fed Large Pedestal Circuits

Individual Sub-Meters: Yes

MDP-Fed Large Pedestals

Use this for 100A or 200A 480V and 277/480V pin-and-sleeve pedestal locations fed directly from the MDP, not from a marine substation.

+ Add MDP-Fed Pedestal

Pedestal	Dock / Area	Receptacle	Rec Qty	MDP Distance (ft)
Large Pedestal 1	Fuel Dock	100A, 480V, 3P/4W	2	300

Figure 13. Select the MDP in Pedestal Circuits, then enter the pedestal name, dock/area, receptacle type, receptacle quantity, MDP distance, and wire material.

- Receptacle quantity is the number of receptacles at the location, including multiple receptacles on one pedestal.
- The load is included in the MDP receptacle count, demand factor, phase loading, feeder schedule, and one-line.
- The load is not included in substation sizing.
- Do not use this editor for the 120/240V pedestal circuits downstream of a substation.



11. Boat Lifts

Select the serving panel, substation, or MDP at the top of the tab before entering lifts. Add one row for each complete lift, and enter the number of motors on that lift rather than a quantity of separate lifts.

Editing **SP1 - Main Dock Panel** Single Panel Marina

Boat Lift Loads

Choose the serving circuit, enter the controller run and motor data, and enter the listed controller OCPD when known. Optional simultaneous-lift limits are available below.

► Calculation rules and assumptions

Panel Lift Limit
PLANNING SCENARIO - AHJ permission pending +

+ Add Boat Lift Load

Location / Run / Raceway	Circuit Source	Pedestal Slip	Motors	HP / Motor	Motor Voltage	FLC (A)	Actual OCPD (A)	Extra 20A Recs
Slip 1 Pedestal Lift	Pedestal Circuit		2	1.5 HP	230/240V, 1 Phase	NEC table	30	0

☒ Sub-meter covers complete lift circuit

Delete

Figure 14. Enter the controller/run, circuit source, pedestal slip when applicable, motor count, horsepower, compatible motor voltage, optional entered FLC, actual OCPD when known, extra 20A receptacles, and raceway.

Circuit source and limits

- Pedestal Circuit compares the lift and qualifying same-slip shore-power load and includes the larger result under the selected-edition marina demand-table note.
- Serving Panel Circuit creates a dedicated branch from the active panel or substation and does not require a pedestal.
- Serving MDP Circuit creates a direct MDP branch where the serving voltage supports the selected motor.
- Maximum Simultaneous Lifts applies between complete lifts only as a separately reported NEC 430.26 feeder-conductor ampacity planning scenario. A reduced value requires an explicit method selection, a Basis Note identifying the substantiated maximum-load and duty basis, and AHJ permission status. It does not replace the scheduled all-connected result.

2026 motor thermal screen

For applicable 2026 three-phase Design BE/CE planning cases, ShorePowerCalc checks five-second locked-rotor heating independently from normal running-load ampacity. The controller supply uses the sum of the applicable motor locked-rotor currents, and each controller-to-motor conductor uses one motor's locked-rotor current. The schedule states whether this thermal check merely passed or governed the selected conductor size.

An NEC 430.26 scenario reports only an alternate feeder-conductor ampacity for the selected complete-lift operating set. Panel and service demand, scheduled conductors and OCPDs, transformer sizing, upstream MDP demand, individual controller branches, the all-connected NEC 430.62/430.63 review, and the 2026 thermal-start check remain on the all-connected basis.

The motor-voltage list is filtered by the selected serving equipment to reduce incompatible entries. Nameplate and manufacturer data always govern.



12. Boat-Lift OCPD Review

The Motor Feeder OCPD Review appears only for panel mains and feeders that supply valid boat-lift motor branches. Feeders without motors are omitted.

Motor Feeder OCPD Review

Feeder	Breaker	430.24 Scheduled Ampacity	430.26 Scenario Ampacity	430.62 Motor Limit	430.63 Breaker Basis	Lift OCPDs	Phase	Status
Panel Main	300/2P	249.23 A	-	70A entered basis	300A entered basis	2/2 entered	B	Entered OCPDs applied
Ckt 1	60/2P	49.50 A	-	30A entered basis	60A entered basis	1/1 entered	B	Entered OCPDs applied

Enter each known listed controller/equipment branch OCPD in the Boat Lift Loads table. An unknown entry does not establish a code-defined lower feeder OCPD; the review reports the Article 430.24 feeder-conductor ampacity, a load-based preliminary feeder selection, and the 430.62/430.63 maximum-controller boundary until every listed controller OCPD is entered. Only feeders with at least one valid downstream boat-lift motor branch appear here. Manufacturer instructions, conductor protection, selective coordination, and project-specific requirements govern the final selection.

Figure 15. The review reports downstream lift-controller OCPD completion, the load-based preliminary feeder selection, and the applicable maximum-controller boundary.

- Enter the listed controller/equipment inverse-time circuit-breaker rating in Actual OCPD when known.
- Leave Actual OCPD blank when unknown. The feeder review remains unresolved and shows the load-based preliminary selection plus the 430.62/430.63 maximum-controller boundary without inventing a code-defined lower OCPD.
- The valid entered OCPD becomes the branch EGC basis and is used in upstream NEC 430.62/430.63 review.
- The schedule separately reports controller-supply and controller-to-motor conductor planning values.
- Applicable 2026 Design BE/CE rows report controller and individual-motor locked-rotor current and identify whether the five-second thermal screen governs conductor size.
- Equipment markings, overload protection, controller listing, selective coordination, and manufacturer instructions govern final selection.
- Reported branch OCPDs are short-circuit and ground-fault protection planning values, not motor overload settings. Individual overload protection and multi-motor controller listing remain unresolved until actual equipment data is verified.



13. Other Marina Loads

Use Other Loads for site lighting, buildings, pumps, controls, security equipment, EV charging, and other non-shore-power loads. Select the serving equipment before adding rows; MDP Direct is listed first in Multi Panel and Large Marina modes.

Use this schedule to allocate non-shore-power loads at 100%. Calculated VA Each must already include every applicable continuous-load, demand, and equipment-specific adjustment. ShorePowerCalc provides planning branch sizing only for hardwired Site Lighting and Security / Controls rows with a positive branch distance. Buildings, pumps or mechanical equipment, fire pumps, EV charging, receptacle-connected loads, floating buildings, and unclassified Other loads remain in demand but require equipment-specific branch design.

+ Add Other Load

Load Description	Category	Calculated VA Each	Qty on Circuit	Phase Type	Phase	Delete
Dock and Parking Lighting	Site Lighting	1800	2	1-Phase, Line-to-Line (2-pole)	Auto	
Facility Location Docking facility / pier Connection Type Hardwired Wire Material Copper						
Raceway PVC Schedule 40 / THWN-2 Branch Distance (ft) 125 3-Phase Neutral No						
Basis / Notes Calculated load includes continuous-load adjustment Branch planning Load is included at 100%. Hardwired ordinary nonmotor branch planning uses the entered conductor, raceway, and positive distance inputs.						
Marina Pump	Pump / Mechanical	3200	1	1-Phase, Line-to-Line (2-pole)	Auto	
Facility Location Landside / not on docking facility Connection Type Hardwired						
Basis / Notes User-entered calculated equipment load Branch status Load is included at 100%; equipment-specific branch design is not calculated.						

Figure 16. Each row is one branch circuit and includes load description, category, calculated VA each, quantity on the circuit, phase type, phase, material, raceway, distance, neutral choice when applicable, and basis notes.

- Enter already-calculated VA that includes all applicable continuous-load, equipment-specific, motor, and project adjustments.
- Quantity means the number of load units on that one branch circuit. Use separate rows for separate circuits.
- Other Loads are added at 100% and do not receive the marina shore-power demand factor.
- Results include a planning breaker, conductors, copper EGC, conduit, distance, and voltage drop.
- Facility Location controls Article 555 screening. Unspecified remains unresolved; Floating Building requires a dedicated 555.53 analysis.
- Fire Pump VA is included at 100%, but ShorePowerCalc deliberately does not calculate its branch OCPD, conductors, EGC, raceway, or voltage drop. Complete the circuit under Article 695. For 2026 docking fire pumps, the report also identifies the non-disconnecting ground-fault monitor and alarm treatment.
- Floating-building VA is included at 100%, but ShorePowerCalc deliberately does not calculate its branch OCPD, conductors, EGC, raceway, or voltage drop. Complete the dedicated building and distribution analysis under NEC 555.53.

Listed equipment MCA/MOCP, OCPD, disconnect, controller, conductor, neutral, harmonic, manufacturer, utility, and AHJ requirements always govern.



14. Calculate Project And Review Results

Choose Calculate Project at the end of Other Loads. The app saves the active equipment state, calculates the selected marina mode, moves to Results, and updates the project status.

Results are organized from project level to branch detail

- Calculation status and warnings.
- MDP or panel load and main summary.
- Phase loading and imbalance.
- Project-level feeder schedules.
- MDP-direct branch details where present.
- Each panel or substation detail, pedestal schedule, boat-lift schedule, other-load schedule, and tagged feeders.
- Motor Feeder OCPD Review only where applicable.

Required review

Report item	What to check before relying on it
Demand and current	Verify receptacle counts, voltage selection, pedestal layouts, the project sub-meter default, and every row-level sub-meter override.
Conductors, raceways, and breakers	Check final feeder, service, neutral, parallel conductor, raceway, EGC, and OCPD selections against the actual equipment listings, project documents, adopted code, utility requirements, and inspecting-authority requirements.
Voltage drop	Confirm actual routing lengths, looped pedestal distances, conductor material, and installation conditions.
GEC/EGC values	Treat as calculation aids. Grounding, bonding, corrosion, and separately derived system requirements need project review.
One-line diagrams	Use as a planning diagram only. Do not use as stamped construction documents.

Do not ignore warnings. Correct invalid inputs and obtain missing equipment information before relying on or exporting the result.



15. Article 555 Protection And Sub-Metering Disclosures

Every exported report includes a dedicated Marina Protection and Article 555 Requirements page. The rows are generated from the selected code edition and the entered shore-power receptacles, accessory or other outlets, boat lifts, and docking-facility distribution scope.

Entered trigger	2023 NEC report output	2026 NEC report output
Non-fire-pump docking distribution	555.35(A): feeders installed on docking facilities, listed GFPE not over 100 mA.	555.35(A): feeders and branch circuits serving docking facilities and piers, listed GFPE not over 100 mA.
Docking fire pump	Article 695 and adopted Article 555 treatment remains explicitly unresolved.	555.35(A): ground-fault monitoring above 100 mA with audible and visual alarm, without disconnecting fire-pump power; Article 695 governs.
Shore-power receptacle	555.35(B)(1): listed GFPE not over 30 mA.	555.35(B)(1): listed GFPE not over 30 mA.
Qualifying other outlet	555.35(B)(2): personnel GFCI for qualifying 1-phase and 3-phase outlets.	555.35(B)(2): personnel GFCI for qualifying 1-phase and 3-phase outlets.
Boat-lift outlet at 240V or less	555.35(C): personnel GFCI.	555.35(C): personnel GFCI.
More than three physical shore receptacles	555.35(D): marina leakage-current measurement device, subject to the stated exception; listing effective January 1, 2026.	555.35(D): listed marina leakage-current measurement device, subject to the stated exception. Note 1 demand exclusions do not reduce this trigger count.
Installed marina protection system	No 555.35(E) schedule row.	555.35(E): qualified-person performance test at initial installation, approved method, manufacturer instructions, retained written record, and AHJ availability.
Shore power installed	No 555.33(B) required-receptacle row.	555.33(B): provide a 120V, 15A or 20A GFCI receptacle for other than shore power.
Floating building	555.53: dedicated analysis required; no automatic branch result.	555.53: dedicated analysis required; no automatic branch result.
Pier distribution	No 555.9 schedule row.	555.9: engineered electrical design documentation available upon AHJ request; exception eligibility is not calculated.
Shore-power connection	555.36(A)-(C): receptacle disconnect plus the listed emergency electrical disconnect requirements.	555.36(A)-(C): receptacle disconnect plus the listed emergency electrical disconnect requirements.
Docking-facility circuits and field conditions	555.37 wire-type insulated EGC with 12 AWG minimum; ShorePowerCalc models copper. 555.13 uses the 2023 solid-copper 8 AWG-minimum bonding rule where triggered.	555.37 wire-type insulated EGC with 12 AWG minimum; ShorePowerCalc models copper. 555.13 narrows the bonding scope and does not require a bonding conductor larger than 8 AWG copper.

How to read the protection schedule

- Entered Scope states which project input triggered the row.
- Planning Requirement summarizes the applicable Article 555 provision without selecting a device or setting.
- Reference identifies the selected NEC edition and section.
- Status distinguishes calculated planning provisions from device, commissioning, or field-condition requirements that the app does not determine.



15. Article 555 Protection And Sub-Metering Disclosures, Continued

Sub-metering disclosure

- The project Yes/No control is a default for newly entered pedestal rows; each row can inherit or override it.
- The demand-table Note 2 facility multiplier is 0.90 only when every shore-powered pedestal in the calculation scope includes an individual kilowatt-hour submeter for each slip; mixed scope receives no reduction.
- If any applicable shore-powered pedestal is unmetered, the 0.90 facility multiplier is not applied to that calculation scope.
- Results and PDF reports state whether the complete entered scope qualifies and show the applied facility shore-load multiplier.
- The report separates physically installed shore-power receptacles from the smaller count retained by the demand table. The 555.35(D) trigger uses the physical count, so Note 1 exclusions do not erase protection requirements.
- For a lift-governed same-slip comparison, Note 2 is applied only when the row is individually metered and the complete lift-circuit meter confirmation is selected.
- For 2026 projects with shore power, the schedule reports whether the required 120V, 15A or 20A GFCI receptacle for other than shore power is represented.
- For 2026 projects, the schedule also reports qualified-person commissioning, approved test method, manufacturer instructions, retained written record, AHJ availability, and the 555.9 engineered-design documentation requirement.

The schedule does not select or list GFPE/GFCI devices, establish settings or selective coordination, verify field locations or bonding conditions, perform commissioning tests, or certify field performance.



16. Single Panel Results

Review total receptacle count, demand factor, lift reconciliation, panel schedule, demand current, main breaker, service conductors, service raceway, voltage drop, phase balance, grounding aids, and tagged feeders.

Total Shore Power Receptacles: 10							
Demand Factor: 80%							
Boat Lift Load Summary							
Location	Source / Circuit	Circuit Source	Motor	FLC	Shore kVA	Lift Branch kVA	Result
Slip 1 Pedestal Lift	Ckt 1 - Side 1	Pedestal Circuit	2 x 1.5 HP 240V 1P	10.00 A NEC Table 430.248 (230V column)	3.60	5.40	Boat Lift controls same-slip comparison. Motor overload protection remains unresolved; multi-motor group-controller listing and overloads are unresolved.
Dock Dedicated Lift	Ckt 7-9 - Serving Panel	Serving Panel Circuit	4 x 1.5 HP 240V 1P	10.00 A NEC Table 430.248 (230V column)	-	10.20	Serving-panel branch included in documented simultaneous operating set. Motor overload protection remains unresolved; multi-motor group-controller listing and overloads are unresolved.
Boat Lift Branch Schedule							
Location	Phase	Branch Demand	Load Current	Controller Run	Branch Circuit	VD	Extra 20A Recs

Figure 17. Single Panel results include project demand and boat-lift reconciliation where lifts are present.

ShorePowerCalc Marina electrical planning and calculation									
Example Marina Unsaved changes Calculations current									
Export PDF									
1 Project	2 Distribution	3 Pedestal Circuits	4 Boat Lifts	5 Other Loads	6 Results	7 One-Line			
Ckt 6	5400.00	5400.00	45/2P	2.03%	110 ft	6 AWG T	Copper	8 T	3/4"
Ckt 7-9	5100.00	5100.00	50/2P	1.38%	50 ft	8 AWG	Copper	10	3/4"
Ckt 10	180.00	0.00	20/1P	0.25%	50 ft	12 AWG	Copper	12	1/2"
1 Conductor upsized above minimum ampacity size.									
Total Demand Load: 56060.00 VA									
Demand Current: 243.63 A									
All 6 shore-powered pedestal row(s) qualify for the facility-level 0.90 multiplier. NEC Table 120.120 Note 2 is treated as a facility-level condition in this calculation scope.									
Main Breaker Size: 300 A									
Motor Feeder OCPD Review									
Feeder	Breaker	430.24 Scheduled Ampacity	430.26 Scenario Ampacity	430.62 Motor Limit	430.63 Breaker Basis	Lift OCPDs	Phase	Status	
Panel Main	300/2P	249.23 A	-	70A entered basis	300A entered basis	2/2 entered	B	Entered OCPDs applied	
Ckt 1	60/2P	49.50 A	-	30A entered basis	60A entered basis	1/1 entered	B	Entered OCPDs applied	
Enter each known listed controller/equipment branch OCPD in the Boat Lift Loads table. An unknown entry does not establish a code-defined lower feeder OCPD; the review reports the Article 430.24 feeder-conductor ampacity, a load-based preliminary feeder selection, and the 430.62/430.63 maximum-controller boundary until every listed controller OCPD is entered. Only feeders with at least one valid downstream boat-lift motor branch appear here. Manufacturer instructions, conductor protection, selective coordination, and project-specific requirements govern the final selection.									
Service-Entrance Conductors Size: 250 kcmil									

Figure 18. The panel schedule and tagged feeder sections report the calculated branch and service planning values.



17. Multi Panel Results

The Multi Panel result starts with the MDP summary, phase loading, and MDP-to-dock-panel feeder schedule, then presents MDP-direct branches and each dock panel's detailed schedules.

MULTI PANEL SUMMARY

Review project basis and calculation warnings before using the schedules below.

Calculation Status

Code Basis
2026 NEC

Project Mode
Multi Panel Marina

MDP
MDP-1 | 120/240V, 1 Phase

Sub-Meter Demand Treatment
90% facility multiplier applied

Total Shore Receptacles
22

Termination Basis
75 C listed/identified terminals required

Article 555 Feeder Classification
2026 docking-facility feeder and branch-circuit screening

2026 mode applies the demand percentages in Table 120.120. Independently confirm the locally adopted edition and amendments.
All 14 shore-powered pedestal row(s) qualify for the facility-level 0.90 multiplier. NEC Table 120.120 Note 2 is treated as a facility-level condition at this MDP.

Unresolved Calculation Items

7 warnings requiring review

UPSTREAM CAPACITY

Calculated project demand and upstream equipment planning values.

MDP Load and Main

MDP Demand
81.65 kVA

MDP Demand Factor
70%

Other Marina Loads
0.00 kVA at 100%

Lift Demand Outside Same-Slip Comparison
0.00 kVA

MDP Lift Demand Method
All connected applicable lifts

MDP Boat-Lift Demand Set
0 of 0 complete lifts

MDP Lift-Basis Scope
Upstream MDP feeder/service calculated demand only

MDP Main
350/2P, 500 kcmil

MDP Raceway
PVC Schedule 80; one set per raceway

MDP Source Connection
Service conductors to service equipment

MDP Source EGC
Not applicable - service conductors are ahead of the first load-side OCPD

MDP GEC
1/0 AWG Copper

MDP Main Bonding Jumper
1/0 AWG Copper

Figure 19. Review the MDP load and main before working through each downstream dock panel.

- Single-phase dock-panel feeders on a 120/208V three-phase MDP are assigned across A-B, B-C, and C-A to reduce imbalance.
- Three-phase dock panels retain their calculated A/B/C load split.
- Final phase assignment remains a planning decision requiring project review.



18. Large Marina Results

The Large Marina result starts with MDP demand, phase loading, MDP main, substation feeder schedule, direct MDP branches, and then each substation's secondary details.

LARGE MARINA SUMMARY

Review project basis and calculation warnings before using the schedules below.

Calculation Status

Code Basis
2026 NEC

Project Mode
Large MDP & Substation Marina

MDP
MDP-1 | 480/277V, 3 Phase

Sub-Meter Demand Treatment
90% facility multiplier applied

Total Shore Receptacles
32

Termination Basis
75 C listed/identified terminals required

Article 555 Feeder Classification
2026 docking-facility feeder and branch-circuit screening

2026 mode applies the demand percentages in Table 120.120. Independently confirm the locally adopted edition and amendments.
All 24 shore-powered pedestal location(s) qualify for the facility-level 0.90 multiplier. NEC Table 120.120 Note 2 is treated as a facility-level condition at this MDP.

Unresolved Calculation Items

1 warning requiring review

UPSTREAM CAPACITY

Calculated project demand and upstream equipment planning values.

MDP Load and Main

MDP Demand
211.61 kVA

MDP Demand Factor
60%

Other Marina Loads
0.00 kVA at 100%

Lift Demand Outside Same-Slip Comparison
0.00 kVA

MDP Lift Demand Method
All connected applicable lifts

MDP Boat-Lift Demand Set
0 of 0 complete lifts

MDP Lift-Basis Scope
Upstream MDP feeder/service calculated demand only

MDP-Fed Large Pedestals
2 receptacles, 166.28 kVA connected

MDP Main
300/3P, 400 kcmil

MDP Raceway
PVC Schedule 80; one set per raceway

MDP Source Connection
Service conductors to service equipment

MDP Source EGC
Not applicable - service conductors are ahead of the first load-side OCPD

MDP GEC
1/0 AWG Copper

MDP Main Bonding Jumper
1/0 AWG Copper

LOAD DISTRIBUTION

Calculated MDP phase currents and maximum phase imbalance.

Phase Loading

Figure 20. Review the MDP calculation before the individual substation sections.

- Selected substation kVA is a planning aid and not a substitute for manufacturer or engineered equipment selection.
- Verify primary feeder, secondary panel, grounding and bonding, transformer impedance, inrush, and separately derived system requirements.
- Confirm direct MDP large-pedestal, lift, and other-load branches are not duplicated under a substation.



19. One-Line Diagrams

The One-Line tab is the dedicated visual review. Results does not duplicate these diagrams. Tagged feeder labels connect each graphic to the schedules.

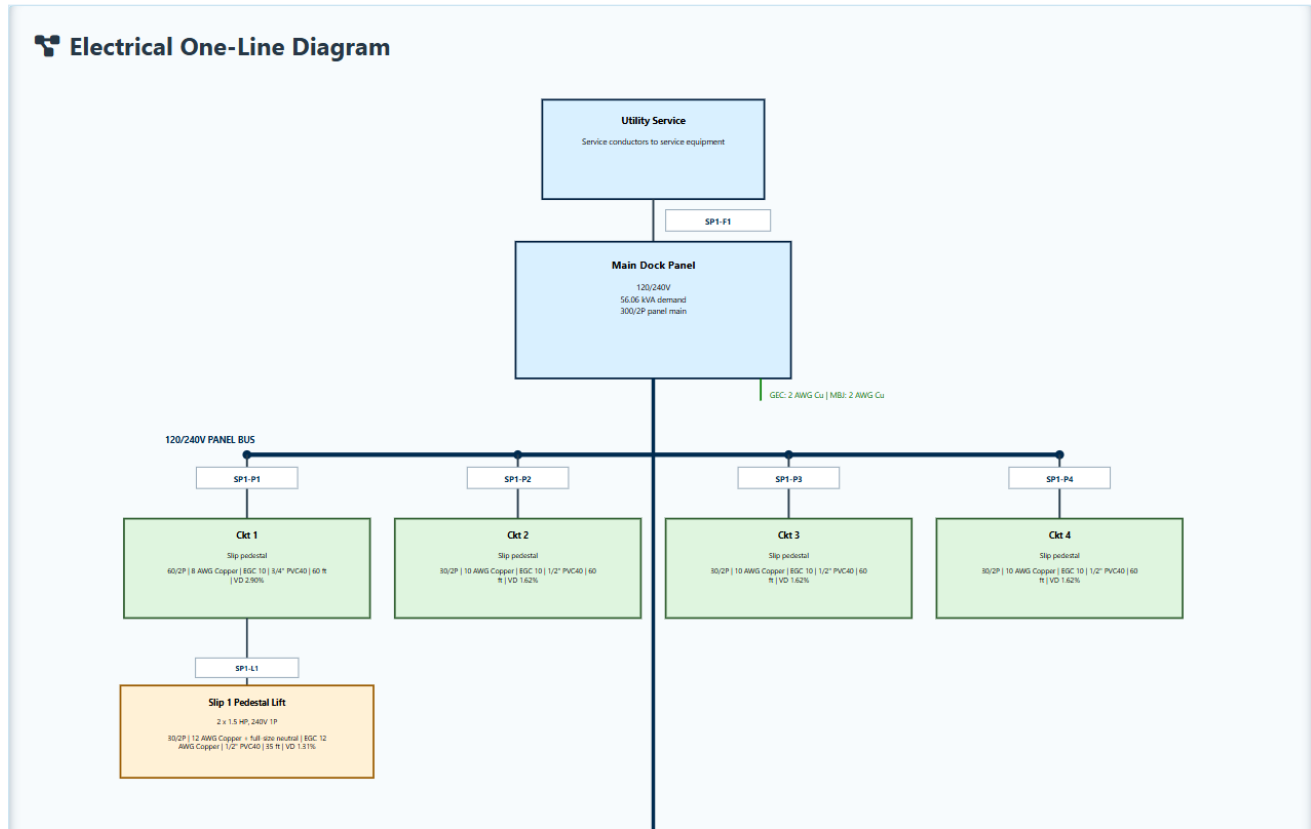


Figure 21. Single Panel one-line: utility/source, panel, pedestal circuits, boat lifts, and other loads.

Read every one-line as a planning diagram only. Confirm the actual source-to-load hierarchy, circuit tags, phase assignment, equipment ratings, and branch origin before sharing it for review.



19. One-Line Diagrams, Continued

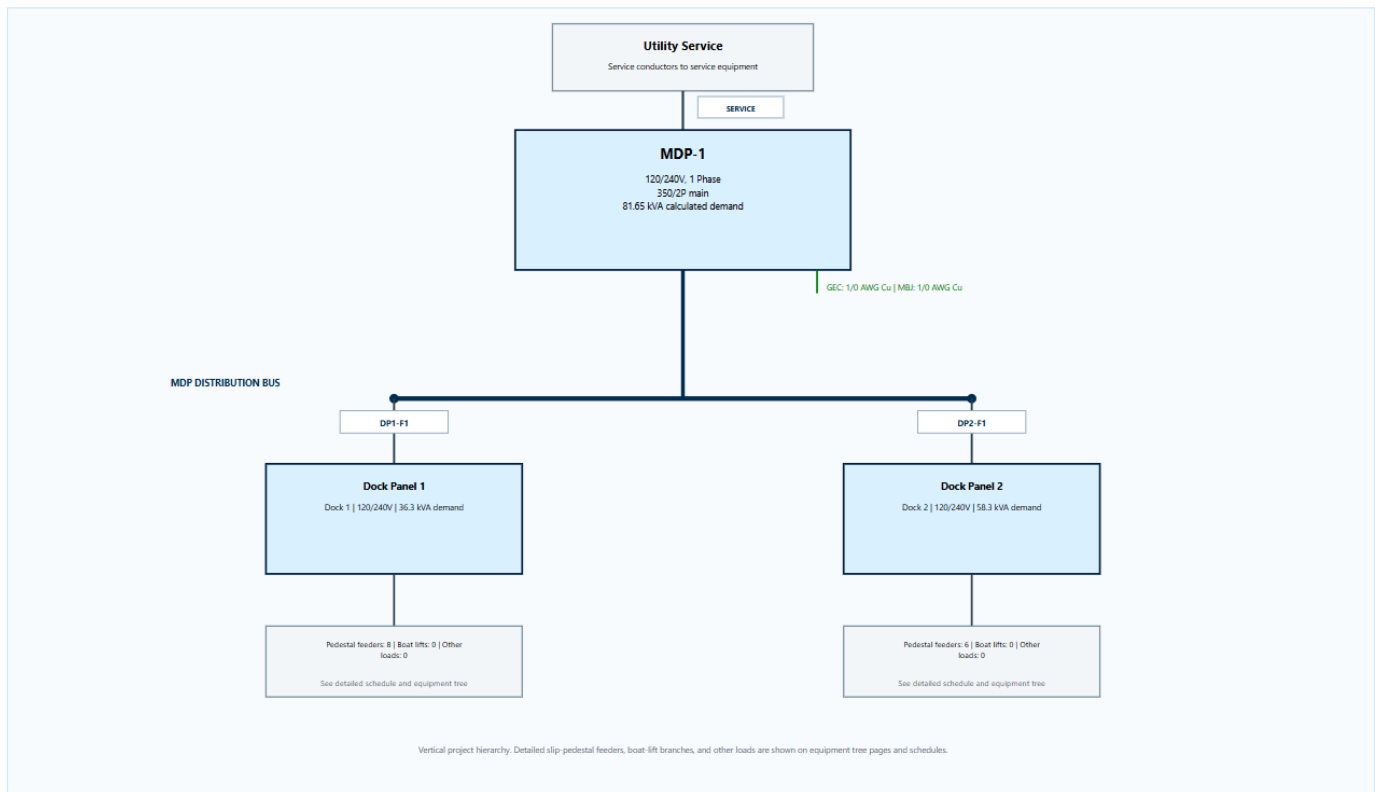


Figure 22. Multi Panel overview: MDP, dock panels, and direct MDP branches.



19. One-Line Diagrams, Continued

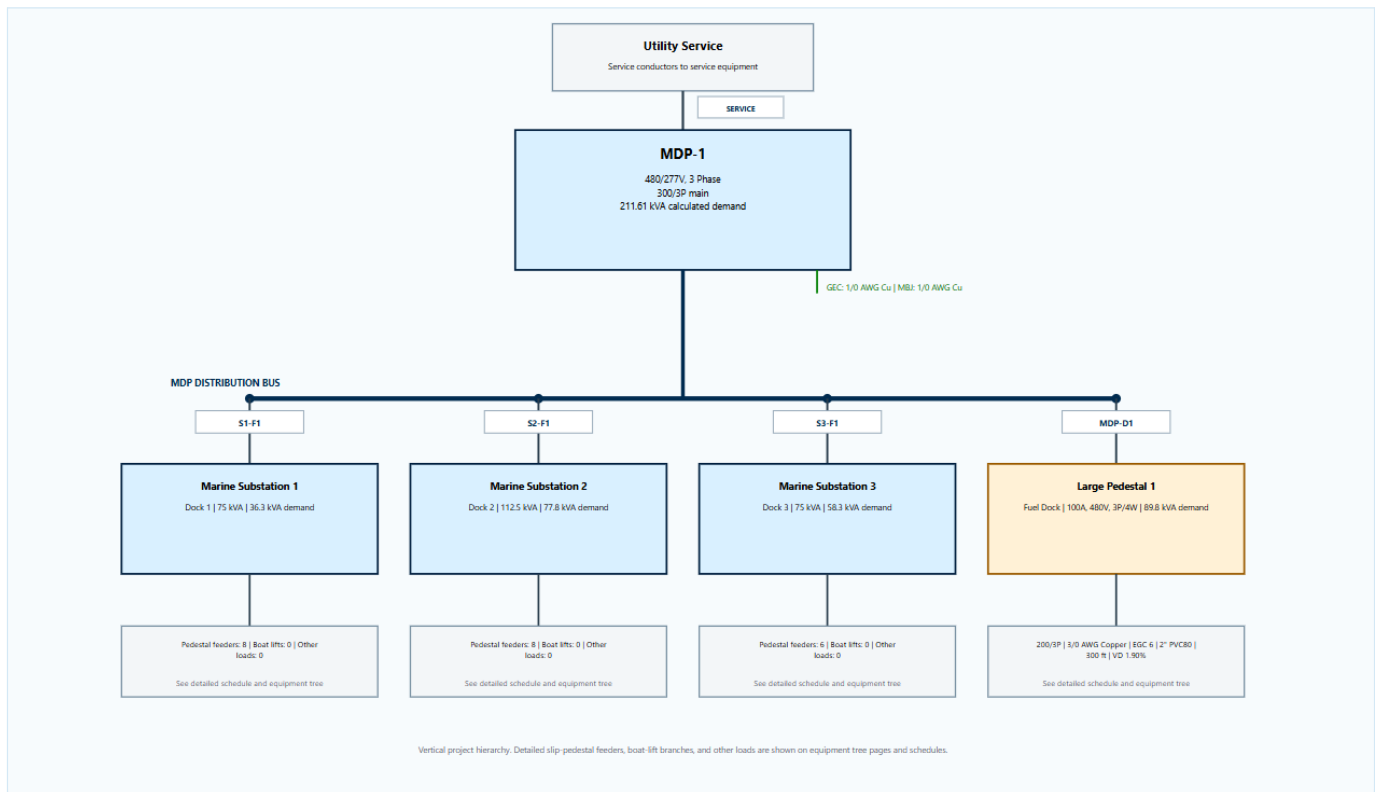


Figure 23. Large Marina overview: 480/277V MDP, substations, and direct MDP branches.



20. Save, Help, And Export PDF

Use File > Open, Save, or Save As to manage .mlc project files. A new project requires one initial Save to choose its location. Once the project has a file path, moving between workflow tabs commits the active editor and automatically saves the current project. Closing with unsaved changes offers Save, Don't Save, or Cancel; Save completes the file write before ShorePowerCalc closes.

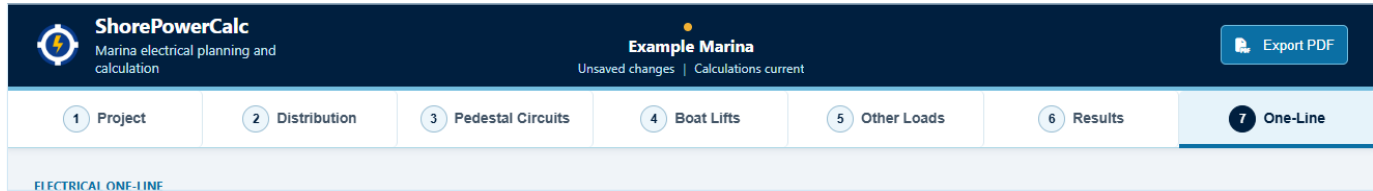


Figure 24. Export PDF is the single PDF command and remains available in the upper-right application header.

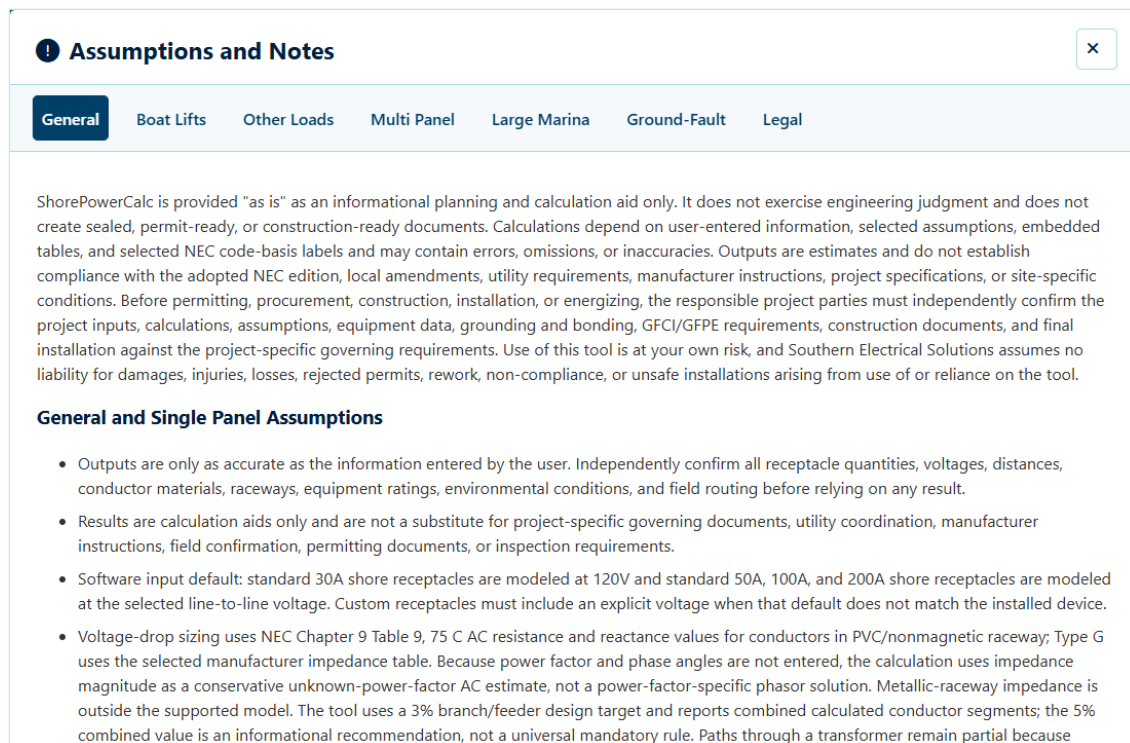


Figure 25. Use Help > Assumptions and Notes for the complete in-app review language. The tabs separate General, Boat Lifts, Other Loads, Multi Panel, Large Marina, Ground-Fault, and Legal notes.

The exported report includes the project identity, selected code basis, calculation summaries, schedules, tagged feeders, one-lines, applicable warnings, assumptions, ground-fault notes, and legal disclaimers. It remains an informational calculation aid requiring project-specific verification.



21. Assumptions And Notes

These pages are generated from the same in-app Help source used by exported report assumptions. Exported reports include the applicable project-mode subset.

ShorePowerCalc is provided "as is" as an informational planning and calculation aid only. It does not exercise engineering judgment and does not create sealed, permit-ready, or construction-ready documents. Calculations depend on user-entered information, selected assumptions, embedded tables, and selected NEC code-basis labels and may contain errors, omissions, or inaccuracies. Outputs are estimates and do not establish compliance with the adopted NEC edition, local amendments, utility requirements, manufacturer instructions, project specifications, or site-specific conditions. Before permitting, procurement, construction, installation, or energizing, the responsible project parties must independently confirm the project inputs, calculations, assumptions, equipment data, grounding and bonding, GFCI/GFPE requirements, construction documents, and final installation against the project-specific governing requirements. Use of this tool is at your own risk, and Southern Electrical Solutions assumes no liability for damages, injuries, losses, rejected permits, rework, non-compliance, or unsafe installations arising from use of or reliance on the tool.

General And Single Panel Assumptions

- Outputs are only as accurate as the information entered by the user. Independently confirm all receptacle quantities, voltages, distances, conductor materials, raceways, equipment ratings, environmental conditions, and field routing before relying on any result.
- Results are calculation aids only and are not a substitute for project-specific governing documents, utility coordination, manufacturer instructions, field confirmation, permitting documents, or inspection requirements.
- Software input default: standard 30A shore receptacles are modeled at 120V and standard 50A, 100A, and 200A shore receptacles are modeled at the selected line-to-line voltage. Custom receptacles must include an explicit voltage when that default does not match the installed device.
- Voltage-drop sizing uses NEC Chapter 9 Table 9, 75 C AC resistance and reactance values for conductors in PVC/nonmagnetic raceway; Type G uses the selected manufacturer impedance table. Because power factor and phase angles are not entered, the calculation uses impedance magnitude as a conservative unknown-power-factor AC estimate, not a power-factor-specific phasor solution. Metallic-raceway impedance is outside the supported model. The tool uses a 3% branch/feeder design target and reports combined calculated conductor segments; the 5% combined value is an informational recommendation, not a universal mandatory rule. Paths through a transformer remain partial because transformer impedance and regulation are not modeled.
- Neutral sizing: Ensure neutral conductor is sized per NEC 220.61, typically matching phase conductors for non-linear loads.
- Equipment grounding conductor: ShorePowerCalc conservatively models equipment grounding conductors as copper. The base copper EGC is selected from NEC Table 250.122 using the feeder or branch-circuit OCPD. For conventional marina wiring within Article 555 scope, NEC 555.37 requires a wire-type insulated EGC sized under 250.122 and not smaller than 12 AWG; 555.37 does not itself specify copper. Where phase conductors are increased beyond the corrected/adjusted ampacity minimum, the EGC is increased proportionately under the selected edition's NEC 250.122 provisions and is capped at the largest ungrounded conductor in that raceway without reducing the 12 AWG marina floor. In schedules and one-lines, the up-arrow symbol identifies a phase conductor or EGC that was increased above its minimum ampacity size.
- Raceway sizing uses NEC Chapter 9 Table 4 PVC Schedule 40 or 80 areas, Chapter 9 conductor areas, a full-size neutral where applicable, and the normal 40% fill limit. Every parallel set is modeled in its own identical raceway; the reported format "2 x 2 1/2\"" means two raceways of that trade size with one complete set in each. A feeder includes one insulated copper EGC per raceway and an isolated downstream neutral. Service conductors ahead of the first service OCPD do not include a load-side EGC. Transformer-secondary conductors to an SDS first disconnect include one supply-side bonding jumper per raceway and separately report the SDS grounding electrode conductor and system bonding jumper.
- The selected upstream connection controls the source-conductor rule. Service conductors are checked against NEC 230.42, feeders include load-side grounding and isolated-neutral requirements, and transformer-secondary conductors require a user-selected supported NEC 240.21(C) rule, primary voltage, primary OCPD, and distance within that rule. THWN-2 correction starts from the 90 C insulation ampacity and is capped at the required 75 C listed/identified equipment terminations. Voltage drop is calculated when distance is provided using a 2% source-segment planning target.
- Ambient-temperature correction uses the 90 C factors in NEC Table 310.15(B)(1)(1) for THWN-2 insulation. Current-carrying-conductor adjustment is also applied where required. The corrected and adjusted result is never permitted to exceed the applicable 75 C equipment-termination ampacity.
- General feeder, service, pedestal distribution, Other Load, and local boat-lift controller and motor calculations are limited to equipment terminals listed and identified for 75 C conductors. A result is outside this calculator's supported scope if either end of a modeled conductor does not have an applicable 75 C termination rating. The 90 C conductor value is used only as the NEC starting point for correction and adjustment; it is never used as the final termination ampacity.
- For 4-wire, 3-phase wye distribution raceways, the neutral is conservatively counted as a current-carrying conductor because marina loads are treated as predominantly nonlinear. Four current-carrying conductors therefore receive the 80% adjustment factor from NEC Table 310.15(C)(1). A single-phase neutral carrying only imbalance is not counted. Independently confirm the actual load characteristics and conductor grouping for the project.



21. Assumptions And Notes, Continued

General And Single Panel Assumptions, Continued

- For nonmotor general circuits, the small-conductor overcurrent limits in NEC 240.4(D) are enforced in addition to 75 C ampacity: 12 AWG aluminum is limited to 15A, 12 AWG copper to 20A, 10 AWG aluminum to 25A, and 10 AWG copper to 30A. Article 430 motor-circuit exceptions are evaluated separately.
- For an OCPD rated over 800A, the corrected and adjusted conductor ampacity is never selected below the OCPD rating. The next-size allowance for devices rated 800A or less is not applied above 800A.
- Installation type determines the supported conductor construction, ampacity and impedance data, grounding construction, and raceway-fill treatment. Independently confirm the exact cable or raceway listing and installation conditions.
- Type G cable is modeled as copper only. Single-phase 1P3W circuits use the listed 3/C Type G-GC construction in Southwire SPEC 44140; 3-phase 3P4W circuits use the listed 4/C Type G construction in Southwire SPEC 44122. Manufacturer 75 C and 90 C ampacity, impedance, and integral grounding-conductor data are used. Four-conductor Type G is conservatively treated as four current-carrying conductors and receives the exact 0.80 adjustment. Aluminum Type G is not supported. Parallel designs use complete identical cable assemblies, not loose individual conductors.
- For PVC Schedule 40 and Schedule 80 raceways with wet-location-rated THWN-2 conductors, wire sizes are limited to 12 AWG through 500 kcmil; paralleling uses the smallest conductor size that meets the ampacity with the minimal number of conductors when exceeding 500 kcmil.
- For high loads exceeding single wire ampacity, paralleled conductors are recommended using the smallest size that allows the least number of conductors.
- Parallel conductors must comply with NEC 310.10(G), including the general 1/0 AWG minimum and identical length, material, circular-mil area, insulation, and termination method. Each raceway is assumed to contain the same number of conductors and the same electrical characteristics, with all circuit conductors and one EGC grouped as a complete set.
- For PVC Schedule 40 and Schedule 80 THWN-2 installations, the smallest wire size used is 12 AWG.
- For supported copper Type G cable installations, the smallest listed size in the modeled manufacturer table is 8 AWG.
- The explicit 20A GFCI accessory option is treated as an accessory/convenience receptacle and is not included in the shore-power receptacle count; its load is modeled at 180 VA (1.5 A x 120 V) and added at 100% demand. Adding the letters GFCI to a 30A-or-larger custom shore receptacle does not convert it to an accessory load.
- The tool assumes that pedestals have individual branch circuit breakers for each receptacle, so the circuits shown are feeders sized from the selected-edition marina demand calculation rather than the sum of all receptacle ratings.



21. Assumptions And Notes, Continued

General And Single Panel Assumptions, Continued

- To loop multiple pedestals on a single feeder, enter the same circuit ID for each pedestal row. Provide the distance from the supply panel to the first pedestal, then list the span between each subsequent pedestal (unless explicitly labeled as a total run); the tool sums these spans, surfaces conflicts, and reports the feeder length in the loop notes.
- Looped pedestal circuits are identified on the one-line diagram by the count shown below each pedestal symbol; confirm each looped segment length and conductor size in the field.
- Each side of a pedestal is considered an individual slip when applying the selected-edition NEC marina demand table.
- The Individual Sub-Meters project setting is the default for new pedestal rows. Each row can inherit that default or override it with Yes or No. The permitted 0.90 facility multiplier is applied only when every shore-powered pedestal in the calculation scope includes an individual kilowatt-hour submeter for each slip. Mixed metered and unmetered scope receives no reduction.
- When a same-slip boat lift governs the automatic Note 3 comparison, the facility multiplier is applied to that lift-governed value only when the pedestal row is individually sub-metered and "Sub-meter covers complete lift circuit" is selected. Select it only when the same individual kWh meter measures the shore-power receptacle and the complete same-slip lift-controller circuit. Otherwise the calculation scope does not qualify for the facility multiplier.
- Demand-table Note 1 exclusions affect the demand calculation and retained demand-table count only. They do not erase a physically installed shore-power receptacle from Article 555 protection schedules or from the physical count used by 555.35(D).
- Under Note 1 of the selected-edition NEC marina demand table, a slip with exactly two shore-power receptacles of different voltages includes only the receptacle with the higher kVA rating. This is applied per pedestal side.
- For balancing, 120V loads (accessory and non-accessory) on side 1 are assigned starting with phase A and on side 2 starting with phase B when identical layouts are used.



21. Assumptions And Notes, Continued

Boat Lift Load Assumptions

- Boat lift motor FLC values use NEC Table 430.248 for single-phase motors and Table 430.250 for three-phase motors. The optional entered FLC can only increase the applicable table value; a lower entry is rejected, the table value is retained, and a warning is reported. Motor combinations without a supported table value fail closed rather than accepting an unrestricted nameplate substitute. Every motor on each selected complete lift is included at 100%, with one 25% largest-motor adder at each calculated feeder level.
- Motor-voltage choices follow the selected serving equipment. A 120/240V single-phase source offers 115/120V and 230/240V single-phase motors; a 120/208V source offers only the compatible 115/120V and 208V choices for its phase configuration; and a direct 480/277V MDP circuit offers 460/480V three-phase motors. Unusual motor ratings require a compatible source plus separately verified nameplate and manufacturer data.
- Boat lift controller-supply conductors are sized for 125% of the highest-rated motor plus the full-load current of the other motors under NEC 430.24. These local branch results default to wet-location-rated copper THWN-2 and do not inherit the pedestal or panel feeder material. Ambient and conductor-count correction starts from the 90 C THWN-2 insulation ampacity and is capped at the assumed 75 C controller and motor equipment terminations. Each local lift branch occupies its own selected PVC Schedule 40 or Schedule 80 raceway. Raceway fill includes the controller-supply phase conductors, one full-size neutral matching the controller-supply conductor, and one copper EGC. The full-size neutral is conservatively counted as current carrying: a 1-phase controller run has three current-carrying conductors, while a 3-phase controller run has four and receives the applicable NEC 310.15(C)(1) adjustment. Separate controller-to-motor conductor results are sized at 125% of one motor FLC under NEC 430.22 and are shown independently from the controller supply. For the 2026 NEC basis, three-phase motors over 2 HP and under 125 HP are conservatively treated as Design BE/CE with full-voltage starting unless a reduced-current starting method is separately verified. Individual motor conductors receive the five-second locked-rotor thermal screen in 430.22(H); controller-supply and applicable upstream conductors receive the corresponding 430.24 Exception No. 4 screen using all applicable connected motor locked-rotor currents. A local Maximum Simultaneous Lifts entry is used only for the separately labeled NEC 430.26 feeder-conductor ampacity scenario and does not reduce the thermal-start screen or any scheduled result. Voltage drop applies only to the entered source-to-controller run. The reported maximum inverse-time circuit breaker is based on NEC 430.52 and, for multiple motors, 430.53(C)(4), assuming a listed group motor controller. The Actual OCPD input also assumes an inverse-time circuit breaker; fuses, instantaneous-trip devices, and other protection types require project-specific verification. A valid actual controller/equipment OCPD entered by the user replaces that calculated maximum in the branch and feeder review. Equipment markings and manufacturer instructions always govern. The copper EGC is sized from the entered actual OCPD when valid, otherwise from the reported maximum, using NEC Table 250.122.
- The default and scheduled feeder-conductor result uses the all-connected Article 430.24 motor-feeder ampacity calculation. When the user explicitly selects an NEC 430.26 planning scenario, the Motor Feeder OCPD Review separately reports the hypothetical reduced feeder-conductor ampacity that would require AHJ permission; it does not replace or reduce the scheduled conductor or feeder OCPD. Dedicated boat-lift branch breaker schedules show amperage and pole count; an asterisk identifies a reported maximum because a valid actual listed controller/equipment OCPD was not entered. The review applies NEC 430.62 and 430.63 only to feeders with valid downstream motor branches and applies each valid user-entered actual lift-controller OCPD. A missing or invalid controller OCPD does not establish a code-defined lower feeder OCPD; the review instead reports the Article 430.24 feeder-conductor ampacity, a load-based preliminary feeder selection, and the 430.62/430.63 maximum-controller boundary until every listed controller OCPD is entered. Equipment markings, conductor protection, selective coordination, manufacturer instructions, the adopted code, and project-specific requirements govern the final feeder breaker.
- Where a boat lift and shore power serve the same slip, the tool compares both calculated loads and uses the larger load under Note 3 of the selected-edition NEC marina demand table. The lift is still modeled with its own appropriately protected branch from the pedestal.



21. Assumptions And Notes, Continued

Boat Lift Load Assumptions, Continued

- A Pedestal Circuit automatically uses the larger lift or shore-power load for that slip under Note 3 of the applicable marina demand table. If the pedestal has no qualifying shore-power receptacle, the complete lift motor load is included on the selected pedestal feeder.
- The Extra 20A Recs field is only for accessory receptacles not already entered in the selected pedestal layout. These loads remain additional. The tool warns when a pedestal layout and lift row both contain accessory receptacles so possible duplicate entry can be reviewed.
- A Serving Panel Circuit is assigned its own panel circuit number and does not require a pedestal selection. Extra 20A receptacles on that row are assigned a separate 20A branch circuit and are not combined with the motor branch.
- Lift motor loads outside the automatic same-slip comparison do not receive the shore-power receptacle demand factor. All motors on one lift are treated as operating together, and one governing 25% largest-motor adder is applied at each calculated feeder level. The NEC does not provide a standard boat-lift diversity percentage. A panel or substation Maximum Simultaneous Lifts entry is used only to calculate a separate NEC 430.26 feeder-conductor ampacity planning scenario between complete lifts. It requires a documented maximum-load and duty basis plus AHJ permission; the basis note is supporting evidence and is not approval.
- An NEC 430.26 planning scenario does not reduce local panel or substation demand, service or main OCPD, transformer auto-sizing, upstream MDP demand, any individual controller branch, the scheduled all-connected NEC 430.24 feeder-conductor result, the all-connected NEC 430.62/430.63 OCPD review, or the 2026 five-second locked-rotor thermal-start screen. The report preserves the scheduled 430.24 ampacity and labels the alternate 430.26 feeder-conductor ampacity and user-reported permission status separately.
- The marina-wide MDP default includes every connected applicable lift. A reduced upstream MDP planning scenario must explicitly select Documented Noncoincident Operating Set and provide a lower whole-lift maximum, evidence type, traceable reference, evidence date, preparer, operating-condition basis, and user attestation. Saved legacy limits and free-text notes alone are ignored. The scenario is reported under 2023 NEC 220.60 or 2026 NEC 120.6 and 555.6(C) and changes only upstream MDP feeder/service calculated demand; it does not reduce downstream panels or substations, transformer sizing, controller branches, motor-feeder OCPD, thermal-start checks, or Article 555 protection.
- Reported boat-lift branch OCPDs are short-circuit and ground-fault protection planning values, not motor overload settings. Individual motor overload protection and the listing/approval of a multi-motor controller remain unresolved until verified from the actual equipment and manufacturer data.

Other Marina Load Assumptions

- Other Loads are added at 100% of the user-entered calculated volt-amperes and are not included in the shore-power receptacle count or marina demand factor.
- The entered VA must already include all applicable continuous-load multipliers, equipment-specific demand factors, motor requirements, lighting calculations, nonlinear loading, and other code or project adjustments. Do not enter unadjusted nameplate values unless that is the correct calculated load for the equipment.
- Panel or Substation loads are included in the selected downstream equipment demand and its upstream feeder. MDP Direct loads bypass the selected downstream panel or substation and are added only at the project MDP.



21. Assumptions And Notes, Continued

Other Marina Load Assumptions, Continued

- Each Other Loads row represents one branch circuit. Quantity is the number of entered load units served by that circuit, so branch load equals Calculated VA Each multiplied by Qty on Circuit. Enter separate rows when the equipment is divided among separate branch circuits.
- Automatic phase assignment balances entered loads against the calculated phase loading. Line-to-neutral loads use a one-pole branch, line-to-line loads use a two-pole branch, and three-phase loads use a three-pole branch. For a three-phase load, selecting a neutral includes four insulated conductors and conservatively counts all four as current-carrying for adjustment.
- Other-load branch planning uses the selected copper or aluminum phase conductors, PVC raceway, entered branch distance, source ambient temperature, assumed 75 C terminations, and a 3% voltage-drop target. The copper EGC is sized from the planning OCPD and is proportionately increased when phase conductors are increased for voltage drop.
- The reported branch OCPD, conductors, EGC, raceway, and voltage drop are planning values. Listed equipment MCA/MOCP, nameplate OCPD, disconnect, controller, neutral, harmonic, fault-current, conductor-temperature, manufacturer, utility, local amendment, and AHJ requirements always govern the final circuit. Pumps, HVAC/mechanical equipment, EV charging equipment, buildings, and similar loads can require additional equipment-specific calculations not derived from entered VA alone.
- Facility Location controls the Article 555 screening. Landside branches are not automatically treated as docking loads. Docking facility / pier branches receive the applicable entered-edition screening. An Unspecified location remains explicitly unresolved and must be classified before relying on the protection schedule.
- For a 2026 docking-facility Fire Pump row, the Article 555 schedule reports the applicable ground-fault monitoring and alarm treatment above 100 mA without disconnecting power and retains Article 695 as governing equipment-specific scope. A 2023 Fire Pump row remains unresolved for project-specific Article 695 and adopted Article 555 treatment.
- A Floating Building location requires a dedicated NEC 555.53 analysis. ShorePowerCalc adds the entered load at 100% but does not calculate its branch OCPD, conductors, EGC, raceway, or voltage drop.

Multi Panel Mode Assumptions

- Multi Panel mode starts the calculation boundary at the low-voltage landside MDP/switchboard and models downstream dock panels and pedestal loads. It does not model utility transformers or 480V marine substations.
- Multi Panel outputs are planning-level calculation aids only. They do not replace project-specific service studies, fault-current studies, coordination studies, utility requirements, manufacturer submittals, or construction documents.
- MDP demand is calculated from all downstream shore power receptacles served by the MDP, not by simply adding individual dock-panel demands.
- Dock-panel feeders are sized from each dock panel's calculated demand and reported as calculation aids. Independently confirm final feeder, panelboard, overcurrent, neutral, grounding, bonding, and voltage-drop requirements for the specific project.
- For 120/208V three-phase MDPs, single-phase dock-panel feeders are automatically assigned across A-B, B-C, and C-A to reduce phase imbalance. Three-phase dock panels retain their calculated A/B/C load split.
- The Multi Panel feeder schedule reports equipment grounding conductors (EGC) for feeders. The one-line and summary also show grounding electrode conductor (GEC) values for the MDP and dock panels as calculation aids.
- When 2026 NEC is selected, the report applies the demand percentages in Table 120.120. Independently confirm the locally adopted edition, effective date, local amendments, and project-specific requirements.



21. Assumptions And Notes, Continued

Large Marina Mode Assumptions

- Large Marina mode starts the calculation boundary at the landside MDP/switchboard and models downstream marine substations and pedestal panel loads. Utility transformer sizing is reference-only and is not included.
- Large Marina outputs are planning-level calculation aids only. They do not replace project-specific service studies, fault-current studies, coordination studies, utility requirements, manufacturer submittals, or construction documents.
- MDP demand is calculated from all downstream shore power receptacles served by the MDP, not by simply adding selected substation kVA ratings.
- MDP-fed large pedestal loads are modeled as direct 480V or 277/480V three-phase shore power receptacles served from the MDP. They are included in the MDP receptacle count, demand factor, phase loading, and feeder schedule, but are not included in marine substation sizing.
- Marine substations are modeled as 480V single-phase primary to 120/240V single-phase secondary equipment. Transformer losses, inrush, impedance, bonding details, and manufacturer-specific requirements require separate project-specific confirmation.
- Automatic phase balancing assigns single-phase 480V substation feeders across A-B, B-C, and C-A using calculated demand to reduce phase imbalance.
- The Large Marina feeder schedule reports equipment grounding conductors (EGC) for feeders. The one-line and summary also show grounding electrode conductor (GEC) values for the MDP and substation secondary panels as calculation aids.
- Independently confirm grounding, bonding, separately derived system requirements, marina equipotential bonding, and local corrosion or environmental requirements for the specific installation.
- When 2026 NEC is selected, the report applies the demand percentages in Table 120.120. Independently confirm the locally adopted edition, effective date, local amendments, and project-specific requirements.



21. Assumptions And Notes, Continued

Ground-Fault Protection (NEC Article 555.35)

- For the 2026 NEC basis, where shore power is installed to boats, the planning review also reports the 555.33(B) requirement for a 120V ac, 15A or 20A GFCI receptacle for other than shore power. The entered project must represent or separately document that receptacle.
- The Article 555 Protection Schedule maps protection requirements from the selected NEC edition and the entered load location and connection type. An Other Load left as Unspecified is reported as unresolved rather than being silently treated as a docking load.
- For the 2023 NEC basis, the Project tab requires a project-wide physical-route classification. Feeders reported as installed on docking facilities are scheduled with listed GFPE not exceeding 100 mA; Unknown is reported as unresolved, while No feeder on a docking facility records that the feeder-location trigger was not applied and still requires route verification. For the 2026 NEC basis, feeders and branch circuits supplying docking facilities or piers are scheduled with listed GFPE not exceeding 100 mA. Permitted exceptions are not assumed automatically.
- Each entered shore-power receptacle is scheduled with listed GFPE not exceeding 30 mA. Qualifying other-than-shore-power receptacle outlets are scheduled for personnel GFCI, and outlets supplying boat lifts at docking facilities are scheduled for personnel GFCI when the outlet does not exceed 240V.
- Projects with more than three physically installed shore-power receptacles are scheduled for the required listed marina leakage-current measurement capability unless a permitted code exception is established. Note 1 demand exclusions do not reduce this physical trigger count.
- For the 2026 basis, qualifying receptacle and hardwired outlets are screened under 555.35(B)(2). Docking-facility fire pumps receive the applicable monitoring/alarm treatment without automatic disconnection above 100 mA, while 2023 fire-pump treatment remains unresolved. Floating-building VA is included at 100%, but branch OCPD, conductors, EGC, raceway, and voltage drop remain unresolved for the separate 555.53 analysis.
- The 2026 basis reports GFPE coordination and performance testing at initial installation by qualified persons using an approved method that follows manufacturer instructions. A written test record must be retained and made available to the authority having jurisdiction.
- Article 555.13 bonding is edition-specific. The 2023 basis reports applicable metal parts in contact with water, metal piping, and non-current-carrying metal parts likely to become energized that are not connected to a branch-circuit or feeder EGC; connection to the panelboard grounding bus uses solid copper not smaller than 8 AWG. The 2026 basis narrows the scope to non-current-carrying metal parts likely to become energized and permits connection to the branch-circuit or feeder EGC or panelboard grounding bus using a bonding conductor not required to be larger than 8 AWG copper. Connections are made under 250.8.
- The app reports applicable requirements and unresolved classifications; it does not select a product, establish settings, prove selective coordination, place devices, or perform field testing. Independently confirm the adopted edition, local amendments, listed equipment instructions, accessibility, and project conditions before relying on the schedule.

Legal And Liability Disclaimer

- By using this tool, you agree to indemnify, defend, and hold harmless Southern Electrical Solutions and the other protected parties identified in the EULA from the claims, losses, liabilities, damages, judgments, penalties, costs, and expenses described there.
- This tool does not constitute professional engineering, legal, consulting, utility, manufacturer, or AHJ advice, and no attorney-client, engineer-client, or other professional relationship is formed.
- All outputs are estimates and calculation aids; final project documents, equipment selections, and installations remain subject to the project-specific governing requirements and responsible parties.
- Do not use an output for procurement, construction, installation, or energizing until its inputs, assumptions, equipment data, and governing requirements have been independently confirmed for the specific project and jurisdiction.
- In the event of any conflict between this tool and official NEC or local codes, the official sources prevail.
- This Help section summarizes selected limitations. The accepted ShorePowerCalc EULA controls if this summary conflicts with or omits any license term.



22. Troubleshooting And Release Checks

When a result looks unexpected

- Confirm Project Mode, NEC Edition, serving equipment, voltage, material, ambient temperature, raceway, and distances.
- Confirm the correct panel, substation, or MDP is selected on each downstream tab.
- Confirm circuit IDs and pedestal-side layouts; repeated IDs create looped feeders.
- Confirm whether a boat lift is pedestal-fed, serving-panel-fed, or MDP-fed.
- Enter listed lift-controller Actual OCPD values when available and review every motor-feeder warning.
- Confirm Other Loads contain calculated VA rather than an unadjusted nameplate value.
- Recalculate after correcting inputs, then review Results and One-Line again before exporting.

When activation fails

- Confirm the license key was copied from the Gumroad receipt or download page and that Windows date and time are correct.
- V2.2.0 uses Windows system networking so corporate proxy and trusted organization certificates can be honored.
- If Windows cannot validate the secure Gumroad connection, try a trusted personal network or ask IT to trust the organization certificate and allow api.gumroad.com.
- Do not disable certificate validation. Contact ShorePowerCalc support with the Gumroad receipt email if activation still fails.

Release and file notes

- Current guide version: 2.2.0.
- Project files use the .mlc format.
- Customer release builds require Gumroad license activation.
- A customer license is valid for 365 days from the Gumroad purchase date and requires periodic and in-session verification. Reinstallation or replacement does not restart the term.
- Keep Windows automatic date and time enabled. The license record and its separate protected integrity key must remain together; local data is rejected if unprotected, inconsistent, expired, or associated with a rolled-back clock.
- Activation requires the user to review the displayed EULA, select the electronic-signature agreement checkbox, and choose Activate & Accept. A changed EULA requires affirmative re-acceptance without adding another Gumroad activation use.
- The Setup and Portable executables contain the same licensed application. The Portable file is not an unlicensed version.

Quick-reference release checklist

- Confirm Project Mode, NEC Edition, project identity, and the intended calculation boundary.
- Confirm every panel, substation, MDP-direct load, circuit ID, receptacle layout, lift source, voltage, distance, material, and raceway.
- Resolve all calculation warnings and enter known listed boat-lift controller OCPDs.
- Reconcile Results, tagged feeder schedules, and One-Line before exporting.
- Save the .mlc project, export the PDF, and retain both with the calculation basis and supporting equipment information.



23. Calculation Source And Document Record

The application contains selected planning data and rules associated with NFPA 70 (National Electrical Code), including the selected-edition marina demand tables, conductor ampacity and adjustment data, overcurrent protection rules, grounding conductor tables, raceway-fill data, and motor full-load-current tables. The guide summarizes software behavior; it does not reproduce or replace the official code text.

Calculation area	Embedded planning basis	Project verification
Marina demand	Selected-edition shore-power demand table and qualifying sub-meter note.	Adopted edition, amendments, receptacle eligibility, and calculation boundary.
Conductors and OCPD	Ampacity, adjustment, small-conductor limits, parallel-set rules, and standard planning ratings.	Actual terminals, listings, temperature limits, equipment ratings, and available fault duty.
Grounding and raceways	EGC/GEC planning tables, proportional EGC increase, Chapter 9 fill, and selected raceway type.	Bonding, separately derived systems, corrosion, wet locations, physical protection, and installation method.
Boat-lift motors	Motor FLC lookup, conductor planning, controller OCPD maximum and feeder-boundary review, and complete-lift demand treatment.	Nameplate data, listed controller, overloads, disconnects, manufacturer instructions, and operating assumptions.
Voltage drop and phases	Entered route lengths, conductor resistance data, supported system geometry, and automatic phase allocation.	Actual routing, conductor characteristics, source voltage, phase assignment, and project criteria.

For project work, verify the currently adopted NEC edition, errata, tentative interim amendments, local amendments, utility rules, equipment listings, and manufacturer instructions. Where a current official source differs from ShorePowerCalc, the official project requirement controls.

Document control

Document	Release	Record
ShorePowerCalc User Guide	Version 2.2.0	Guide revision: July 26, 2026
Windows customer package	ShorePowerCalc v2.2.0	Setup and Portable executables; protected PDF guide; EULA; install and third-party notices; checksums.
Project file	.mlc	Save the project file separately from the application and exported report.

Final reminder: when official NEC text, local amendments, project specifications, utility requirements, manufacturer instructions, or AHJ direction differ from this app, the official project requirements control.