ShorePowerCalc User Guide

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

Version 2.0.0 - Updated July 12, 2026

This guide explains how to set up projects, choose the correct marina workflow, enter pedestal circuits, review schedules and one-lines, and export reports.

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.

Important: ShorePowerCalc is an informational calculation aid. It is not a licensed engineer and does not create sealed, permit-ready, or construction-ready documents.

1. Safety, Scope, And Required Review

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

The app does not replace engineering judgment, official NEC text, local amendments, utility requirements, manufacturer instructions, plan review, field verification, inspection, or AHJ approval.

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 reviewed and approved by the engineer of record and AHJ.

What the app can help with

- Calculate demand from user-entered shore power receptacles and accessory loads.
- Model user-entered boat-lift motor loads, controller-supply conductors, and preliminary motor-feeder OCPD ranges.
- Apply the selected project-level individual sub-meter demand setting.
- Size planning-level conductors, breakers, EGC values, conduit values, and voltage-drop results from embedded tables and assumptions.
- Create schedules, summaries, and one-line diagrams for the selected marina workflow.

What the app does not do

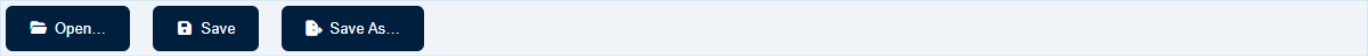
- It does not certify NEC compliance or local-code compliance.
- It does not perform fault-current, coordination, arc-flash, transformer inrush, utility, corrosion, or manufacturer-specific studies.
- It does not select, set, locate, or coordinate GFPE/GFCI devices.
- It does not replace the listed lift-controller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

2. Basic App Flow

The app now follows the same layout for all marina types: project information first, then the distribution setup for the selected mode, then pedestal circuit entry, results, one-line diagrams, and PDF export.

Recommended workflow

- Open or create the project.
- Complete Project Information and choose the correct Project Mode.
- Complete the distribution setup for that mode.
- Enter pedestal circuit rows and distances.
- Run the mode-specific calculation button.
- Review all warnings, schedules, one-lines, and assumptions.
- Export the PDF report and submit it for required professional/AHJ review.

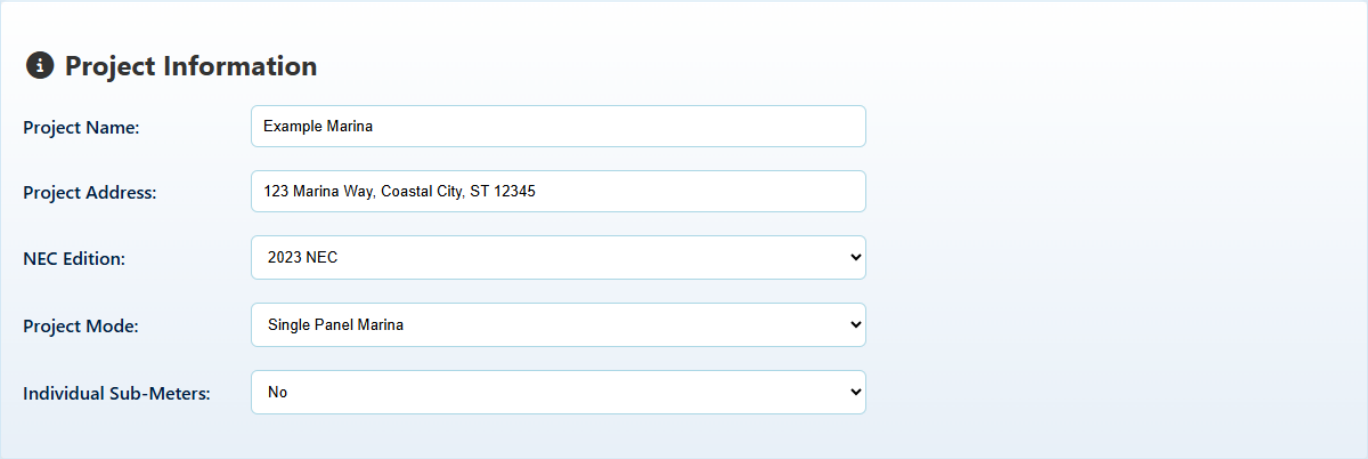


Project file commands are available from the top toolbar.

Open, Save, and Save As use ShorePowerCalc project files. These files preserve project inputs, mode selections, and downstream panel or substation data so the project can be reopened later.

3. Project Information

Project Information applies to every mode. Keep this section limited to information shared across the full project.



Project Information contains the shared project name, address, NEC edition label, project mode, and individual sub-meter setting.

Field notes

- Project Name and Project Address appear in reports and PDFs.
- NEC Edition controls the code-basis label and marina demand-table reference shown in reports. The app uses NEC Table 220.58 for 2023 projects and Table 120.120 for 2026 projects. Always verify the locally adopted edition, effective date, and amendments.
- Project Mode controls which distribution setup section appears below Project Information.
- Individual Sub-Meters applies the project-level demand reduction where the selected NEC basis and AHJ allow it.

4. Choosing The Correct 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.

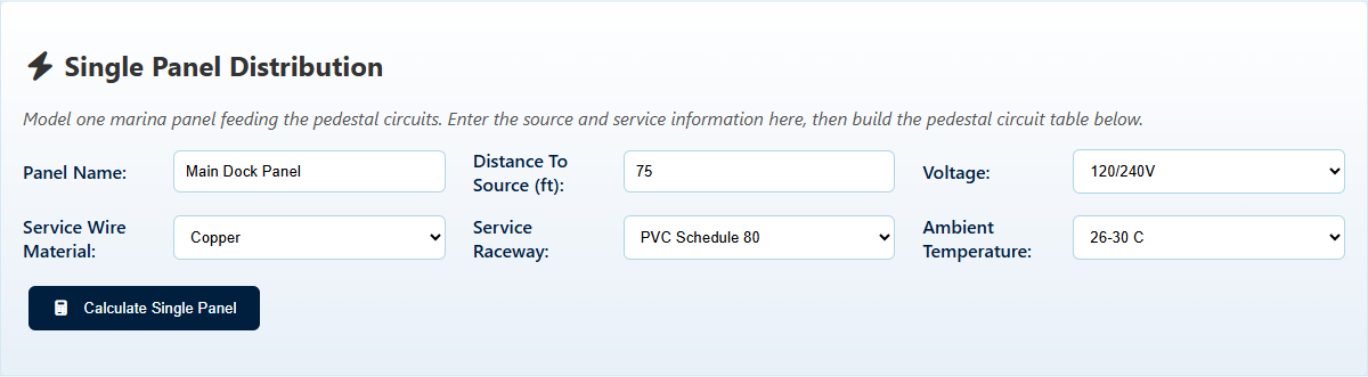
Choose the simplest mode that accurately matches the project distribution boundary. Do not use Large MDP & Substation Marina unless the project actually includes the 480V MDP/substation distribution arrangement being modeled.

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.

5. Single Panel Marina

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



Single Panel Distribution contains the source and service information for the one panel.

How to use Single Panel Marina

- Enter the panel name and source distance.
- Select the voltage, service wire material, PVC Schedule 40 or Schedule 80 service raceway, and ambient temperature.
- Enter pedestal circuit rows in the Pedestal Circuit Details table.
- Click Calculate Single Panel.
- Review the demand summary, panel schedule, voltage-drop values, one-line diagram, warnings, and assumptions.

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

6. Pedestal Circuit Entry

The pedestal circuit table is reused by all three marina modes. In Single Panel mode it belongs to the main panel. In Multi Panel mode it belongs to the selected dock panel. In Large MDP & Substation mode it belongs to the selected substation secondary panel.

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

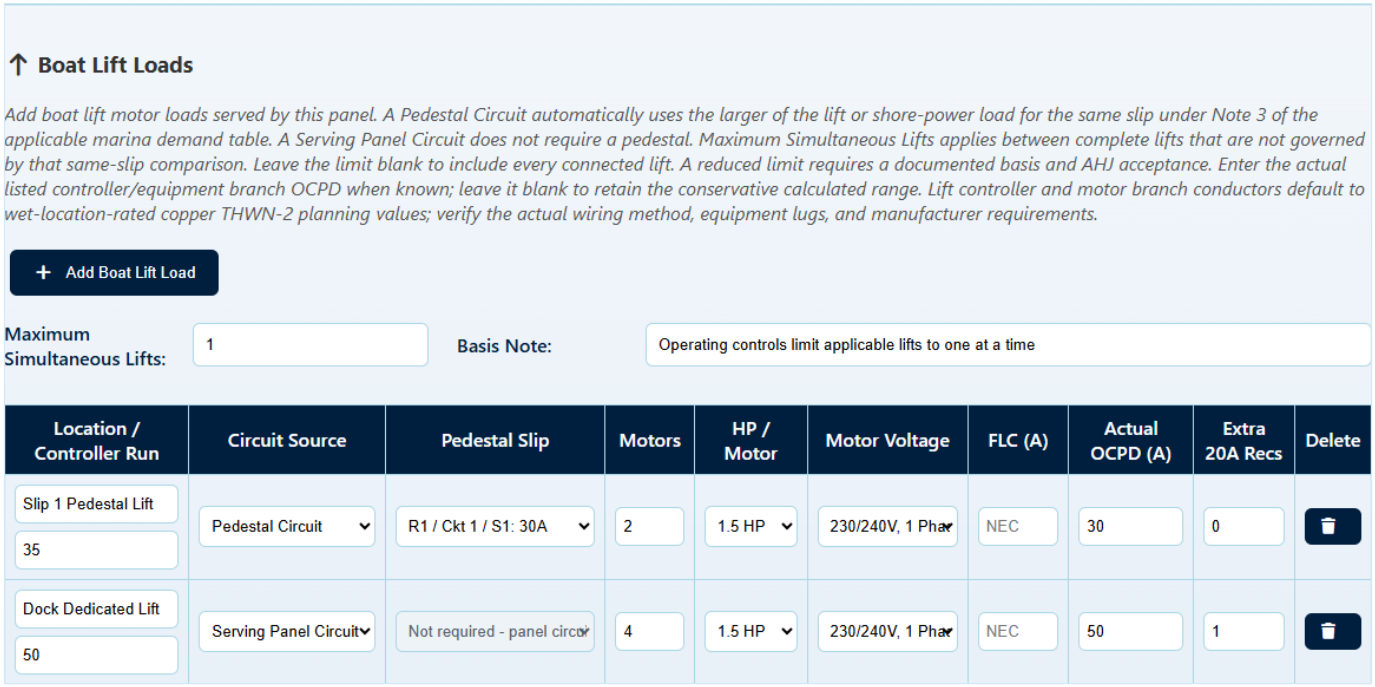
Pedestal Circuit Details rows define the pedestal side layouts, installation type, material, and distance.

Circuit entry guidance

- Use clear circuit IDs. Reusing a circuit ID tells the app that multiple pedestal rows are looped on the same feeder.
- Select pedestal side layouts that match the receptacles on each side of the pedestal.
- Use Custom only when a standard layout does not describe the receptacles.
- Enter distances carefully. For looped pedestals, enter the panel-to-first-pedestal distance, then each span between pedestals unless using an explicitly labeled total run.
- Review warnings after calculation. Warnings usually mean the project needs corrected inputs or engineering review.

7. Boat Lift Loads

Boat Lift Loads is available in all three marina modes. In Multi Panel mode it belongs to the selected dock panel; in Large MDP & Substation mode it belongs to the selected substation secondary panel.



Boat Lift Loads records the circuit source, pedestal slip when applicable, complete-lift motor count, horsepower, voltage, optional FLC override, actual controller OCPD when known, controller run, and extra 20A accessory receptacles.

Circuit source

- Pedestal Circuit requires a pedestal slip. If that slip has shore power, the app automatically counts the larger lift or shore-power load under Note 3 of the applicable marina demand table. If it has no shore power, the full lift load is included on the pedestal feeder.
- Serving Panel Circuit does not require a pedestal. The app assigns a panel circuit number and shows the lift as a direct branch from the serving panel.
- Extra 20A Recs are additional loads not already entered in the pedestal layout. A Serving Panel Circuit lift receives a separate 20A panel circuit; a Pedestal Circuit lift treats them as locally protected pedestal loads.

Enter the number of motors on one complete lift, not a quantity of separate lifts. Add a separate row for each lift. All motors on one lift remain together when Maximum Simultaneous Lifts is used.

7. Motor Feeder OCPD Review

The review appears after calculation when the panel main or a feeder supplies at least one valid boat-lift motor branch. Feeders without motors are omitted.

Motor Feeder OCPD Review

Feeder	Breaker	430.24 Min Ampacity	430.62 Motor Limit	430.63 Breaker Basis	Lift OCPDs	Phase	Status
Panel Main	250A prelim.	220.90 A	70A entered*	250A entered*	2/2 entered	B	Entered OCPDs applied*
Ckt 1	60A prelim.	44.10 A	30A entered*	60A entered*	1/1 entered	B	Entered OCPDs applied*

** Enter each known listed controller/equipment branch OCPD in the Boat Lift Loads table. Unknown entries retain the conservative calculated range. Only feeders with at least one valid downstream boat-lift motor branch appear here. Manufacturer instructions, conductor protection, selective coordination, and AHJ review govern the final selection.*

The Lift OCPDs column shows whether every downstream controller/equipment branch OCPD has been entered.

How to use the review

- The controller-supply conductor uses the Article 430.24 motor-load calculation, and each controller-to-motor conductor is reported separately.
- Lift controller and motor branch results default to wet-location-rated copper THWN-2. Verify the actual wiring method, equipment lugs, and manufacturer instructions; the pedestal or panel feeder material is not reused for this local branch.
- Enter the listed controller/equipment branch rating in Actual OCPD (A) when it is known. This field assumes an inverse-time circuit breaker; fuses, instantaneous-trip devices, and other protection types require separate engineering review. Leave it blank when unknown so the app retains the conservative calculated range instead of assuming an equipment value.
- A valid actual OCPD is used for that lift branch, its copper EGC basis, and each upstream NEC 430.62/430.63 review. An invalid value produces a warning and is not used to resolve feeder protection.
- The Motor Feeder OCPD Review lists only panel mains and feeders that actually supply a valid boat-lift motor branch. Its Lift OCPDs column shows how many downstream controller OCPDs have been entered.
- A Maximum Simultaneous Lifts value below the connected lift count requires a documented operating basis and AHJ acceptance.

8. Single Panel Results

After calculating, review the total demand, demand current, main breaker, service conductor, service conduit, service voltage drop, phase balance, and grounding electrode conductor aid.

Circuit ID	VA A	VA B	Breaker	VD %	Distance	Wire Size	Wire Material	EGC Size	Conduit Size
Ckt 1	1944.00	4536.00	60/2P prelim.	1.47%	60 ft	6 AWG	Copper	10	3/4"
Ckt 2	2592.00	2592.00	30/2P	2.33%	60 ft	8 AWG	Copper	8 (upsized)	3/4"
Ckt 3	2592.00	2592.00	30/2P	2.33%	60 ft	8 AWG	Copper	8 (upsized)	3/4"
Ckt 4	2592.00	2592.00	30/2P	2.33%	60 ft	8 AWG	Copper	8 (upsized)	3/4"
Ckt 5	4320.00	4320.00	50/2P	2.25%	110 ft	6 AWG	Copper	8 (upsized)	1"
Ckt 6	4320.00	4320.00	50/2P	2.25%	110 ft	6 AWG	Copper	8 (upsized)	1"
Ckt 7-9	5100.00	5100.00	50/2P	1.38%	50 ft	8 AWG	Copper	10	Verify
Ckt 10	180.00	0.00	20/1P	0.25%	50 ft	12 AWG	Copper	12	1/2"

Total Demand Load: 49260.00 VA

Demand Current: 215.30 A

10% reduction applied to qualifying shore-power demand per NEC Table 220.58 Note 2.

Main Breaker Size: 250 A

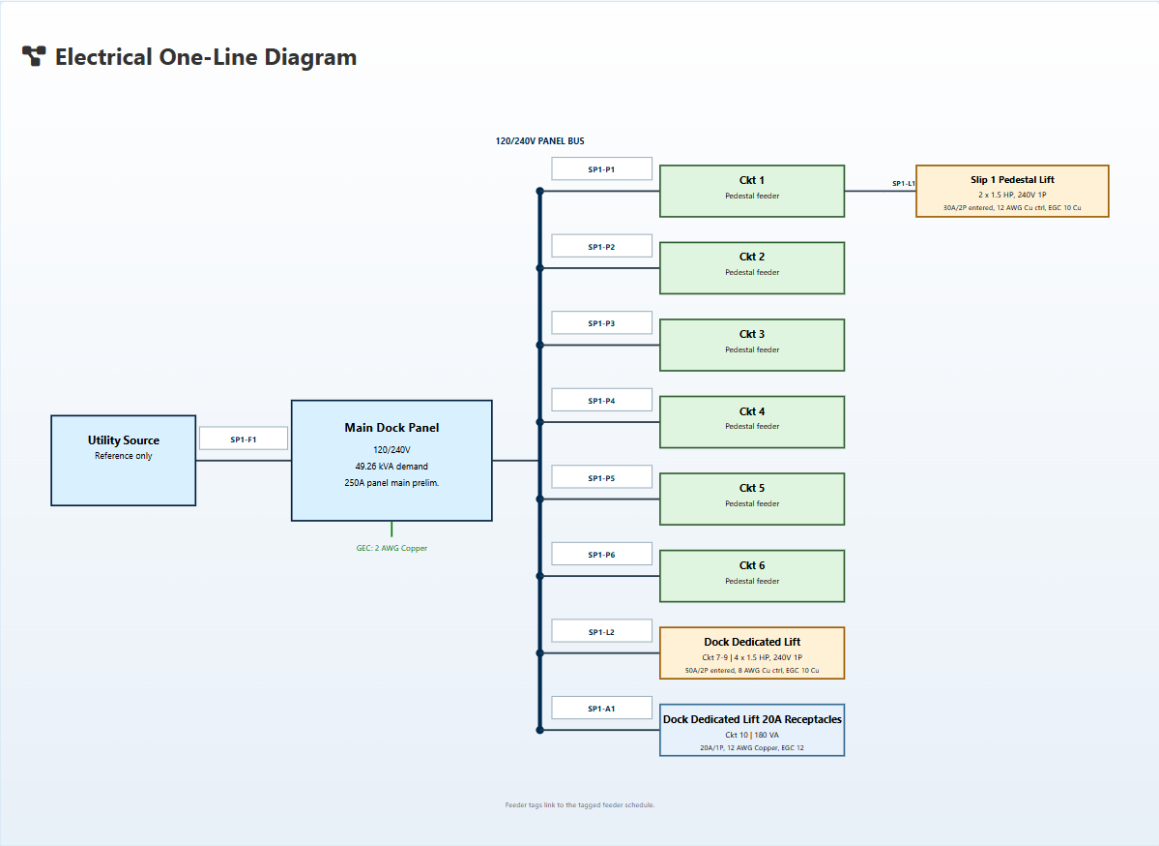
Motor Feeder OCPD Review

Feeder	Breaker	430.24 Min Ampacity	430.62 Motor Limit	430.63 Breaker Basis	Lift OCPDs	Phase	Status
Panel Main	250A prelim.	220.90 A	70A entered*	250A entered*	2/2 entered	B	Entered OCPDs applied*
Ckt 1	60A prelim.	44.10 A	30A entered*	60A entered*	1/1 entered	B	Entered OCPDs applied*

** Enter each known listed controller/equipment branch OCPD in the Boat Lift Loads table. Unknown entries retain the conservative calculated range. Only feeders with at least one valid downstream boat-lift motor branch appear here. Manufacturer instructions, conductor protection, selective coordination, and AHJ review govern the final selection.*

Single Panel results include the panel schedule and service summary values.

8. Single Panel One-Line And Checks



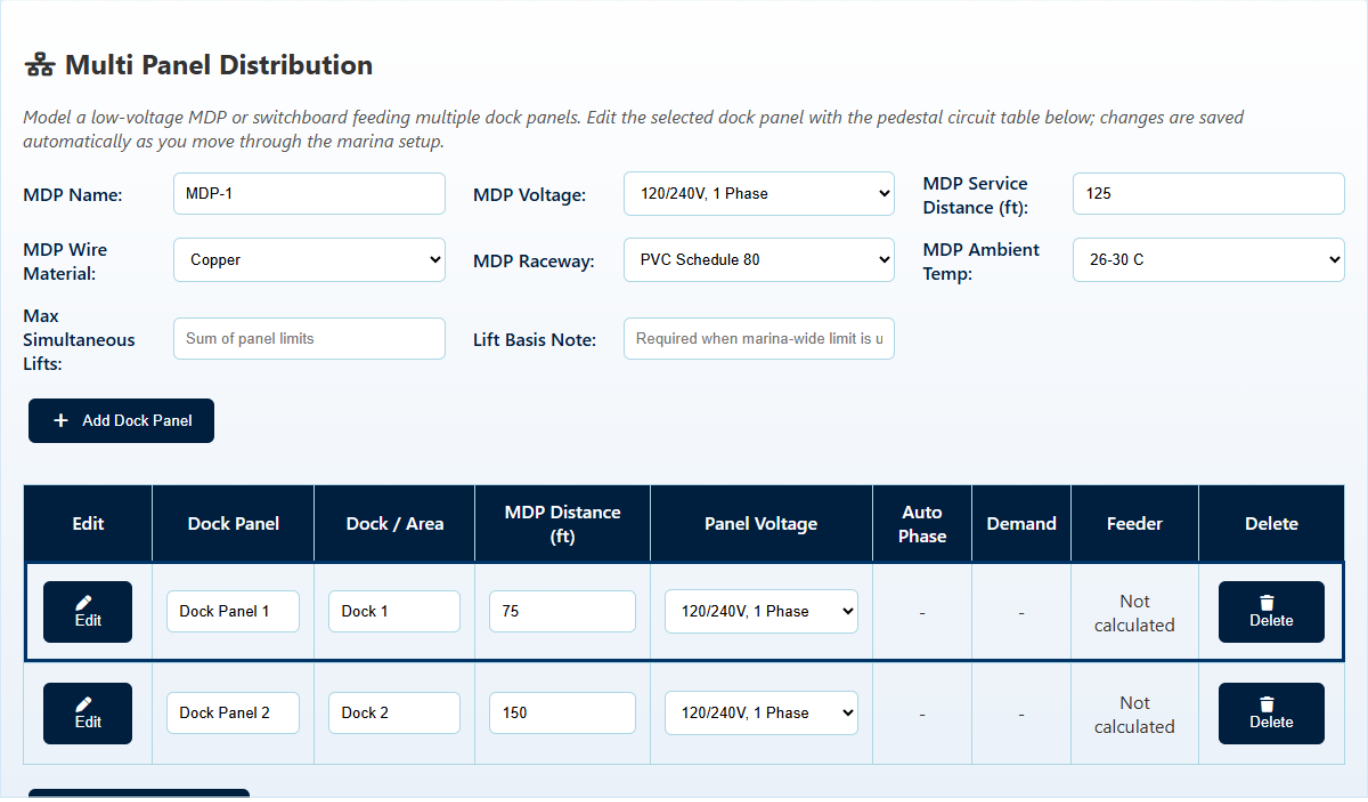
The Single Panel one-line summarizes the service/panel and pedestal feeders.

Report checks

- Verify the demand factor and total shore receptacle count.
- Check each circuit breaker, conductor, EGC, conduit, distance, and voltage-drop value.
- Read a parallel raceway result such as '2 x 3 inch' as two identical 3-inch raceways with one complete parallel conductor set and one copper EGC in each raceway.
- Confirm the one-line matches the intended field layout before sharing it for review.

9. Multi Panel Marina

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



Multi Panel Distribution models the MDP and a list of downstream dock panels.

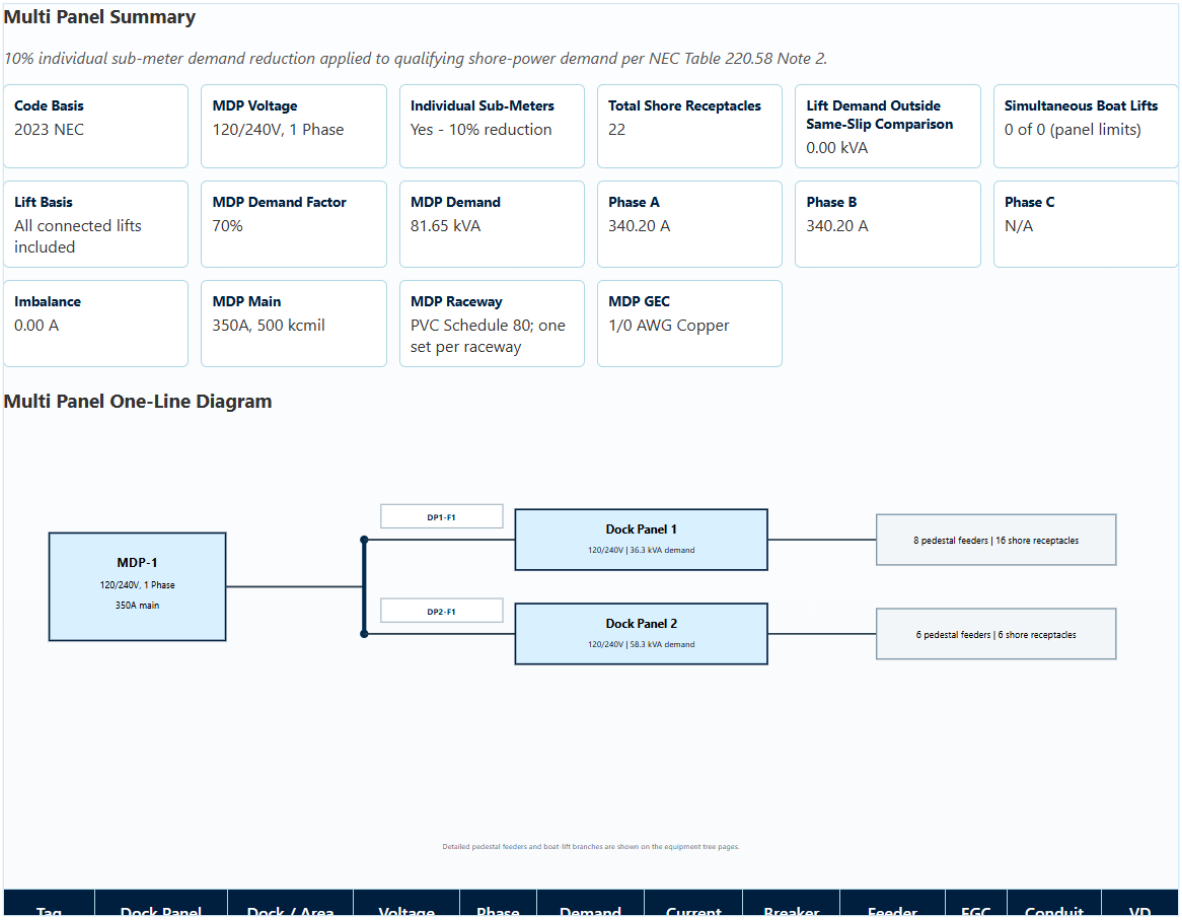
How to use Multi Panel Marina

- Enter the MDP name, voltage, source distance, wire material, PVC Schedule 40 or Schedule 80 MDP raceway, and ambient temperature.
- Add one dock panel for each downstream panel.
- For each dock panel, enter the dock/area, MDP distance, and panel voltage.
- Click Edit for a dock panel, then enter its pedestal circuits and boat-lift loads below. Changes are retained automatically when you work with another dock panel.
- Click Calculate Multi Panel below the dock-panel list after all dock panels are entered.

MDP demand is calculated from all downstream shore power receptacles served by the MDP. It is not calculated by simply adding each dock-panel demand.

10. Multi Panel Results

The Multi Panel report shows project-level MDP demand, phase loading, imbalance, MDP main sizing, dock-panel feeder schedules, and each dock panel's pedestal schedules and one-lines.



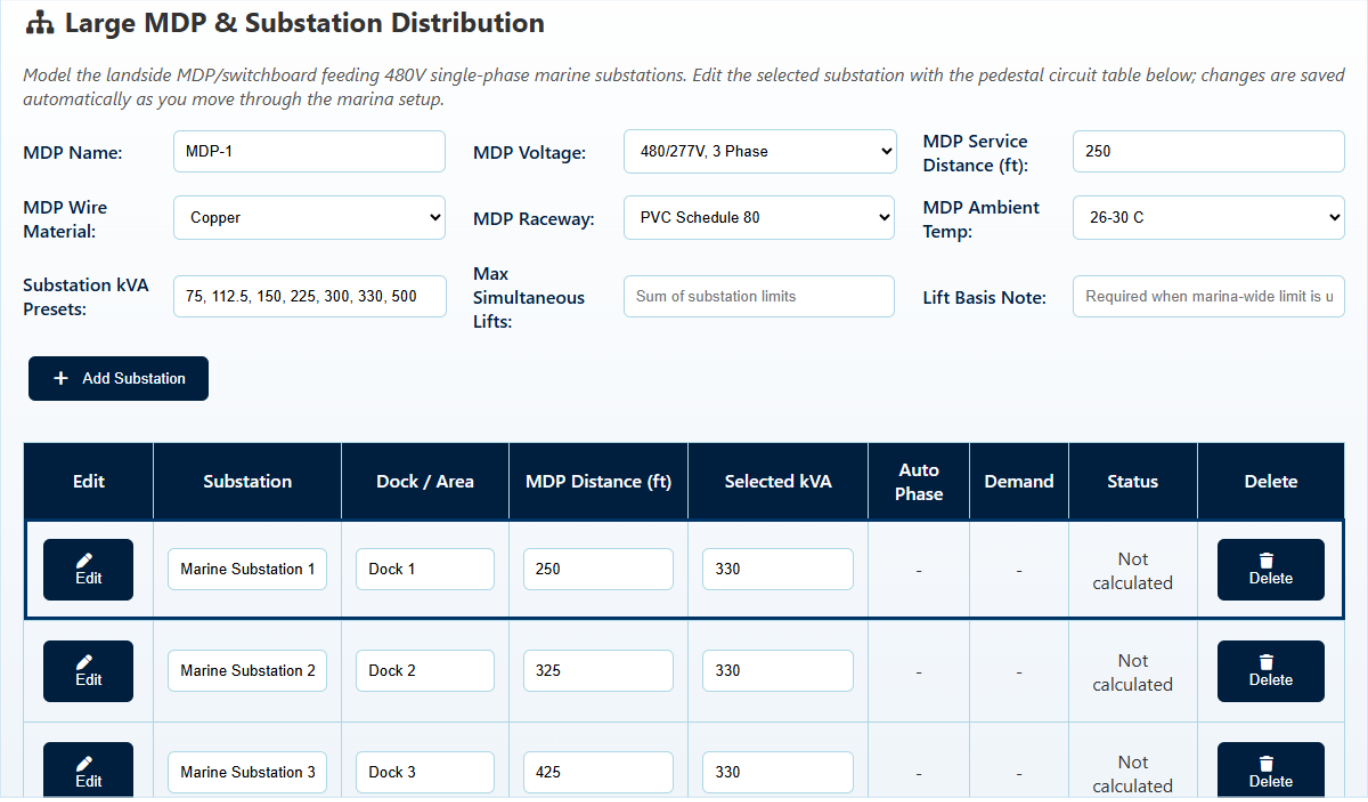
Multi Panel results show the MDP summary, one-line, and feeder schedule.

Phase balancing

- For 120/208V three-phase MDPs, single-phase dock-panel feeders are automatically assigned across A-B, B-C, and C-A to reduce imbalance.
- Three-phase dock panels retain their calculated A/B/C load split.
- Automatic balancing is a planning aid. Final phase assignment must be reviewed against field conditions and AHJ requirements.

11. Large MDP & Substation Marina

Use Large MDP & Substation Marina for larger projects with a 480/277V landside MDP/switchboard feeding marine substations. The modeled substations feed downstream 120/240V pedestal panels.



Large MDP & Substation Distribution models the landside MDP, substation feeder distances, and editable substation kVA presets.

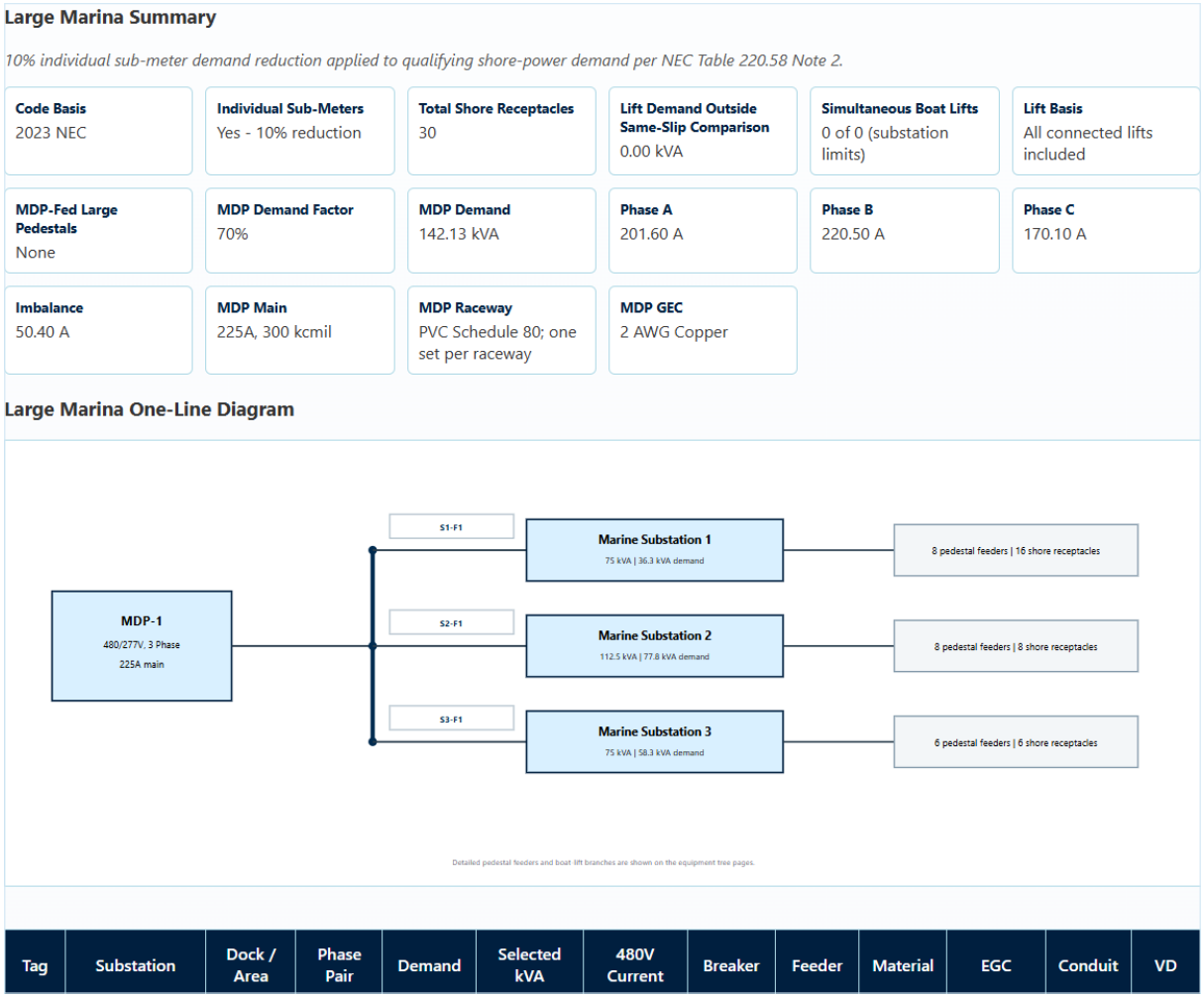
How to use Large MDP & Substation Marina

- Enter MDP information, select the PVC Schedule 40 or Schedule 80 MDP raceway, and enter the editable substation kVA catalog.
- Add one substation for each marine substation or dock area.
- Enter each substation's dock/area, MDP distance, and selected/catalog kVA values.
- Click Edit for a substation, then enter its downstream pedestal circuits and boat-lift loads below. Changes are retained automatically when you work with another substation.
- Add any 100A or 200A 480V or 277/480V pedestal receptacles that are fed directly from the MDP in the MDP-Fed Large Pedestals section.
- Click Calculate Marina below the MDP-fed pedestal list after all substations and direct MDP loads are entered.

This mode does not size the utility transformer. The calculation boundary starts at the MDP/switchboard.

12. Large MDP & Substation Results

The Large MDP & Substation report shows MDP demand, phase loading, MDP main sizing, substation feeder schedules, auto phase assignment, substation summaries, pedestal schedules, and one-line diagrams.



Large Marina Summary

10% individual sub-meter demand reduction applied to qualifying shore-power demand per NEC Table 220.58 Note 2.

Code Basis 2023 NEC	**Individual Sub-Meters** Yes - 10% reduction	**Total Shore Receptacles** 30	**Lift Demand Outside Same-Slip Comparison** 0.00 kVA	**Simultaneous Boat Lifts** 0 of 0 (substation limits)	**Lift Basis** All connected lifts included
MDP-Fed Large Pedestals None	**MDP Demand Factor** 70%	**MDP Demand** 142.13 kVA	**Phase A** 201.60 A	**Phase B** 220.50 A	**Phase C** 170.10 A
Imbalance 50.40 A	**MDP Main** 225A, 300 kcmil	**MDP Raceway** PVC Schedule 80; one set per raceway	**MDP GEC** 2 AWG Copper		

Large Marina One-Line Diagram

Tag	Substation	Dock / Area	Phase Pair	Demand	Selected kVA	480V Current	Breaker	Feeder	Material	EGC	Conduit	VD

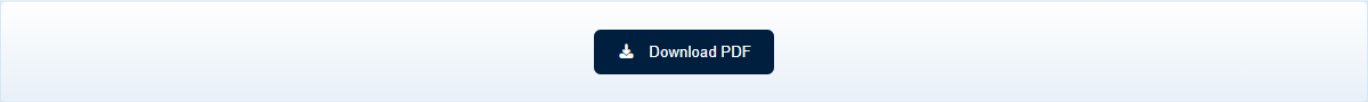
Large MDP & Substation results show the MDP summary, combined one-line, and MDP-to-substation feeder schedule.

Substation sizing notes

- The app selects from the editable kVA preset list as a planning aid.
- Transformer losses, impedance, inrush, separately derived system requirements, manufacturer submittals, and grounding/bonding details must be reviewed separately.
- Do not use the selected kVA value as a substitute for engineered equipment selection.

13. PDF Export And Deliverables

After reviewing the on-screen results, use Download PDF to create the calculation report for the active project mode.



Download PDF exports the report for the selected mode.

Reports may include

- Project information and code-basis label.
- Demand summary and sub-meter demand note where selected.
- Panel, dock-panel, or substation feeder schedules.
- Pedestal circuit inputs and panel schedules.
- Boat-lift load schedules, controller branch information, and motor-feeder OCPD review where applicable.
- One-line diagrams.
- Warnings, assumptions, ground-fault notes, and legal disclaimers.

Before sending a PDF outside your office, verify that the selected mode, voltage, distances, receptacle layouts, and sub-meter setting match the project. The exported PDF is still a calculation aid and must be independently reviewed.

14. Assumptions And Notes

This section mirrors the assumption, ground-fault, and legal language included in the app and exported PDF reports, formatted as readable guide pages instead of a screenshot.

ShorePowerCalc is provided 'as is' as an informational calculation aid only. It is not a licensed electrical engineer, does not exercise engineering judgment, and does not create sealed, permit-ready, or construction-ready documents. Calculations are based on user-entered information, selected assumptions, embedded tables, and selected NEC code-basis labels, and may contain errors, omissions, or inaccuracies. Outputs are estimates only and are not guaranteed to comply with the adopted NEC edition, local amendments, utility requirements, manufacturer instructions, project specifications, or site-specific conditions. A licensed electrical engineer, qualified professional, utility, manufacturer, and AHJ, as applicable, must independently review and approve all inputs, calculations, assumptions, equipment selections, grounding and bonding, GFCI/GFPE settings, construction documents, and installations before permitting, procurement, construction, or energizing. 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 Assumptions

- Outputs are only as accurate as the information entered by the user. Verify 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 sealed engineering documents, utility coordination, manufacturer instructions, field verification, plan review, inspection, or AHJ approval.
- 20A and 30A receptacles are assumed to be 120V; 50A, 100A, and 200A receptacles are assumed to be 240V per NEC 220.5(A).
- Voltage-drop sizing uses a 3% branch/feeder design target in this tool. This is a planning criterion, not a guarantee of NEC compliance; verify project specifications, total feeder-plus-branch drop, actual conductor characteristics, and AHJ requirements. For mixed 120V and 240V loads, voltage drop is evaluated per leg using the applicable voltage.
- Neutral sizing: Ensure neutral conductor is sized per NEC 220.61, typically matching phase conductors for non-linear loads.
- Equipment grounding conductor: The base copper EGC is selected from NEC Table 250.122 using the feeder or branch-circuit OCPD. 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, without exceeding the largest ungrounded conductor in that raceway.
- Raceway sizing uses NEC Chapter 9 Table 4 PVC Schedule 40 or 80 areas, Chapter 9 conductor areas, a full-size neutral where applicable, one insulated copper EGC in each raceway, and the normal 40% fill limit. Every parallel set is modeled in its own identical raceway; the reported format '2 x 2 1/2 inch' means two raceways of that trade size with one complete conductor set in each. Verify whether an EGC is required in the specific service or feeder segment and confirm the final raceway arrangement with the engineer/AHJ.
- Service entrance conductors sized per NEC 230.42, ampacity not less than calculated demand load, using 75 C column, with voltage drop calculation if distance provided (2% max recommended).
- For service entrance conductors, sizes over 500 kcmil copper or 750 kcmil aluminum are installed in parallel configurations.
- Ambient temperature correction uses the 75 C factors in NEC Table 310.15(B)(1)(1) based on the selected range and caps the effective multiplier at 1.0 so corrected ampacity never exceeds the applicable termination-temperature column. The grouped 20 C-or-less option therefore does not increase base ampacity.
- General feeder, service, pedestal distribution, and local boat-lift controller and motor branch ampacity calculations use the 75 C column from NEC Table 310.16 (formerly 310.15(B)(16)). The tool assumes the associated equipment terminals are listed and identified for 75 C conductors. If any terminal is limited to a lower temperature, recalculate that circuit using the lower column. Never use 90 C conductor ampacity 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. Verify the actual load characteristics and conductor grouping for the project.
- 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.

14. Assumptions And Notes, Continued

General Assumptions, Continued

- 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 does not change the base ampacity table, but it does set supported/minimum conductor sizes and whether the tool calculates raceway fill. Verify the actual cable or raceway listing and installation conditions.
- For G-Cable, wire sizes are limited to 8 AWG through 500 kcmil; paralleling uses the smallest conductor size that meets the ampacity with the minimal number of 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-conductor ampacity, the tool selects the fewest supported parallel conductor sets that satisfy corrected ampacity and voltage-drop criteria, then calculates one same-size PVC raceway for each set.
- 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 G-Cable installations, the smallest wire size used is 8 AWG.
- 20A GFCI receptacles are treated as accessory/convenience receptacles and are not included in the shore power receptacle count for demand factors; their load is calculated at 180 VA (1.5 A x 120 V) per NEC 220 and added at 100% demand.
- The tool assumes that pedestals have individual branch circuit breakers for each receptacle, so the circuits shown are feeders sized based on the demand-adjusted load under the applicable marina demand table: NEC Table 220.58 for 2023 projects or Table 120.120 for 2026 projects (not full connected load).
- 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 for the purpose of applying the marina demand factors in NEC Table 220.58 for 2023 projects or Table 120.120 for 2026 projects.
- Where individual sub-meters are present, selecting 'Yes' applies the table's 10% reduction to the qualifying shore-power demand under Note 2. The reduction is not applied to dedicated serving-panel lift motor or accessory receptacle loads.
- Under Note 1 of the applicable marina demand table, for a boat slip with exactly two shore power receptacles of different voltages, only the one with the higher kVA rating is included in the load and count for demand calculations. This is applied per pedestal side or slip.
- Boat lift motor FLC values use NEC Table 430.248 for single-phase motors and Table 430.250 for three-phase motors unless a manual override is entered. Every motor on each selected complete lift is included, with one 25% largest-motor adder at each calculated feeder level.

14. Assumptions And Notes, Continued

General Assumptions, Continued

- 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, use the 75 C ampacity column based on assumed 75 C controller and motor terminals, and do not inherit feeder material or wiring method. Each local lift branch is assumed to occupy its own raceway or cable with no more than three current-carrying conductors; grouped branch circuits require the NEC 310.15(C)(1) adjustment. Separate controller-to-motor conductors are sized at 125% of one motor FLC under NEC 430.22. The Actual OCPD input assumes an inverse-time circuit breaker; other protection types require separate engineering review. A valid actual controller/equipment OCPD entered by the user replaces the calculated maximum and becomes the copper EGC sizing basis. Equipment markings and manufacturer instructions govern final conductor, controller, overload, OCPD, and termination requirements, including any terminal temperature rating below 75 C.

- Feeders supplying boat-lift motors are not reduced below the Article 430.24 motor-feeder ampacity calculation. Breakers marked 'preliminary' are planning values. The NEC 430.62/430.63 review appears only for feeders with valid downstream motor branches and applies each valid entered actual lift-controller OCPD. Missing or invalid entries retain a calculated lower-to-maximum range. Equipment markings, conductor protection, selective coordination, manufacturer instructions, and AHJ review govern the final feeder breaker.

- A Pedestal Circuit automatically uses the larger lift or shore-power load for the selected 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.

- Extra 20A Recs are additional accessory loads and must not duplicate receptacles already entered in the selected pedestal layout. The tool warns when both locations contain accessory receptacles so the input can be reviewed.

- A Serving Panel Circuit receives an automatic panel circuit number and does not require a pedestal. Extra 20A Recs on that row receive a separate 20A panel branch circuit rather than being combined with the motor circuit.

- All motors on one lift are treated as operating together. Maximum Simultaneous Lifts applies only between separate complete lifts. A limit below the connected lift count is a user-entered NEC 430.26 operating assumption that requires supporting documentation and AHJ acceptance.

- 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.

14. Assumptions And Notes, Continued

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 engineered service studies, fault-current studies, coordination studies, utility service requirements, manufacturer submittals, stamped construction drawings, or AHJ review.
- 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. Final feeder, panelboard, overcurrent, neutral, grounding, bonding, and voltage-drop decisions must be reviewed by the engineer of record and AHJ.
- 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. Verify the locally adopted edition, local amendments, and project-specific requirements.

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 engineered service studies, fault-current studies, coordination studies, utility service requirements, manufacturer submittals, stamped construction drawings, or AHJ review.
- MDP demand is calculated from all downstream shore power receptacles served by the MDP, not by simply adding selected substation kVA ratings.
- 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 must be reviewed separately.
- 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.
- Grounding, bonding, separately derived system requirements, marina equipotential bonding, and local corrosion/environmental requirements must be verified by the engineer of record and AHJ.
- When 2026 NEC is selected, the report applies the demand percentages in Table 120.120. Verify the locally adopted edition, effective date, local amendments, and project-specific requirements.

Ground-Fault Protection (NEC Article 555.35)

- Ground-fault protection, leakage-current coordination, bonding, grounding, and corrosion-related requirements are life-safety items and must be reviewed by the engineer of record, equipment manufacturer, and AHJ.
- Article 555 ground-fault requirements vary by adopted NEC edition, receptacle type, feeder or branch-circuit location, equipment rating, marina configuration, device coordination, and local amendments. Verify exact GFPE/GFCI thresholds, testing, location, and coordination requirements with the adopted NEC edition and AHJ.
- Do not rely on this app to select, set, locate, or coordinate GFPE/GFCI devices. Manufacturer data, engineered coordination review, field testing requirements, and AHJ direction must control.
- Ground-fault protection devices should be installed in locations to minimize nuisance tripping and must be accessible for testing and maintenance.
- Consult the local AHJ to confirm specific ground-fault protection requirements, as they may impose additional or more stringent rules.

Legal And Liability Disclaimer

- By using this tool, you agree to indemnify and hold harmless Southern Electrical Solutions from any claims, liabilities, or expenses related to its use.
- 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; actual installations must be designed, reviewed, approved, inspected, and accepted by qualified professionals and authorities with jurisdiction.
- Do not use any output for permitting, procurement, construction, installation, or energizing until it has been independently verified and approved 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.

15. Troubleshooting And Quality Checks

Use these checks when a result looks unexpected.

- Confirm the selected Project Mode. The visible distribution section should match the project.
- Confirm NEC Edition, Individual Sub-Meters, voltage, wire material, ambient temperature, and source distances.
- Confirm the correct dock panel or substation is selected before editing its pedestal circuits or boat-lift loads.
- Look for warnings below the results. Correct input issues before exporting.
- If the one-line or schedule does not match the project, review the circuit IDs and pedestal side selections.
- If a Motor Feeder OCPD Review says Enter missing lift OCPD, obtain the listed controller/equipment branch OCPD and enter it on the corresponding Boat Lift Loads row before finalizing the feeder.
- For looped pedestal feeders, confirm whether distances are segment spans or cumulative total distances.
- If the PDF export is missing diagrams, recalculate the active mode and export again.

Version and release files

- Current guide version: 2.0.0.
- 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 online verification. Reinstallation or replacement does not restart the term.
- 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 owner/development shortcut in the project folder is for local working-copy use only.

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.