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**MARIN CLEAN ENERGY INTEGRATED RESOURCE  
PLAN ANNUAL UPDATE, NOVEMBER 2012**

**ORDER INSTITUTING RULEMAKING  
TO INTEGRATE AND REFINE  
PROCUREMENT POLICIES AND CONSIDER LONG-TERM  
PROCUREMENT PLANS**



# Marin Clean Energy

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## Integrated Resource Plan Annual Update

November 2012

Approved by MEA Board of Directors on November 1, 2012

# MCE Integrated Resource Plan Annual Update

Approved 11-01-2012

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## Introduction

The Marin Energy Authority (MEA) provides retail electric generation services to customers within its service area comprising the political boundaries of Marin County and the City of Richmond in Contra Costa County. Through its Marin Clean Energy electric aggregation program, MEA provides service to eight out of ten electricity customers in the region, and MEA is the default electric generation provider for new or relocated customers within its service area. MEA strives to provide electric services to its customers at stable and competitive prices utilizing the cleanest possible sources of energy. With these objectives in mind, MEA plans for and secures commitments from a diverse portfolio of electric resources to reliably serve its customers' needs on a long-term basis. The Marin Energy Authority Implementation Plan and Statement of Intent, revised and adopted in July, 2012, presented MEA's initial resource plan. This resource plan updates the existing plan and documents MEA's resource planning objectives for the next ten year planning period.

## Purpose of Resource Plan

The resource plan has three primary purposes. These are to: 1) quantify resource needs over the planning period; 2) prioritize resource preferences and set forth other relevant energy procurement policies; and 3) provide guidance to the electricity procurement process undertaken by program management. In practical terms, the plan documents the energy procurement policy guidelines established by the MEA Board to which program management adheres in its day-to-day management of the electric supply activities of MEA. Going forward, MEA's resource plan will be updated and approved by the MEA Board of Directors annually.

Highlights of the resource plan include the following:

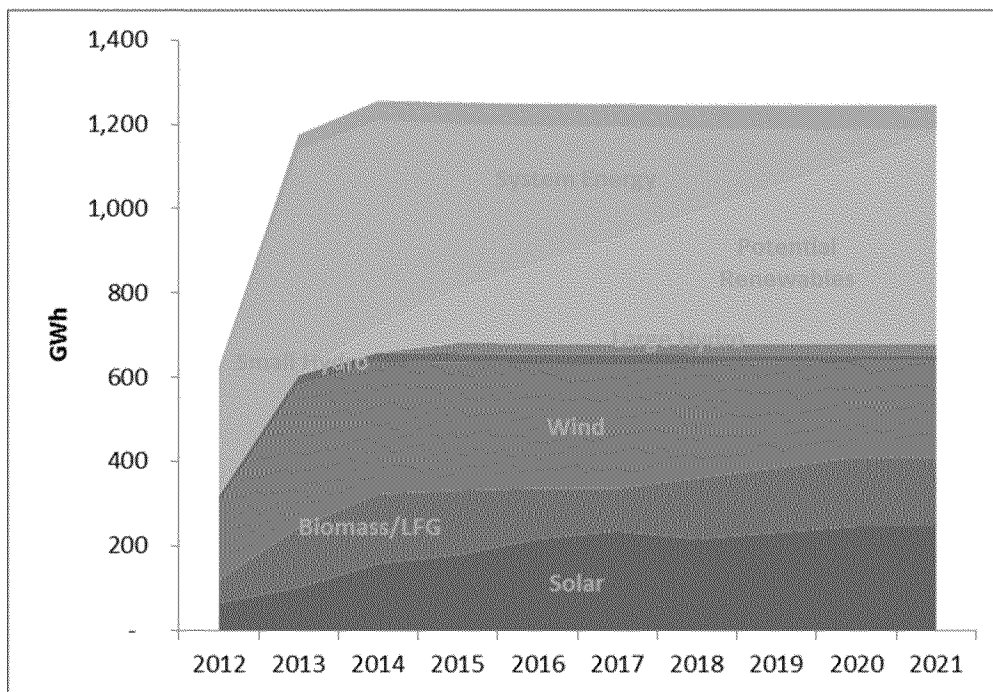
- MEA will manage a portfolio of electric resources to maintain a renewable energy content of greater than 50% during the ten-year planning period and progress toward a long term goal of increasing the renewable resource content to 100%.
- MEA currently manages a portfolio of fourteen energy contracts with eleven different energy suppliers and anticipates managing an increasing number of energy contracts in carrying out the resource plan.
- MEA is largely resourced for the next several years, having contracted for almost the entirety of its projected needs for bundled renewable energy through 2016, non-renewable energy through 2017 and capacity through 2015.
- The majority of MEA's voluntary renewable energy purchases (those in excess of RPS-eligible purchases) are under contract through the end of 2013.
- MEA currently has approximately 1,900 customers generating renewable electricity under MEA's Net Energy Metering Tariff representing 5,700 KW (5.7 MW) of local renewable generating capacity; MEA plans to increase total NEM generating capacity within the service area to 20,000 KW (20 MW) by 2021.
- MEA is planning for an additional 10,000 KW (10 MW, above and beyond the aforementioned expansion to NEM generating capacity) of distributed solar photo-voltaic generation within the

service area by 2021 and may promote in-area distributed generation through direct investment in generation, subject to Board approval of specific generation projects that may be identified.

- Energy efficiency programs will offset MEA’s annual energy and capacity requirements by 2% and 3%, respectively during the current planning period; demand response programs will offset MEA’s annual capacity requirements by 5% during the current planning period.
- MEA will procure its energy needs through various methods as appropriate, including bilaterally negotiated agreements, requests for proposal processes, and the annual Open Season process.
- Specific authorities for entering into energy procurement contracts are allocated among management, the MEA Board, and subsets of the MEA Board depending upon the term of the resource commitment and whether the procurement is consistent with the adopted resource plan.

Figure 1 illustrates the projected resource mix during the period covered by this resource plan. The projected mix is illustrative; actual resource utilization will depend upon market conditions and resource availability at the time MEA engages in additional energy procurement.

Figure 1: Marin Clean Energy Resource Mix, 2012-2021



## General Resource Planning Principles

MEA’s resource planning considers three planning horizons: 1) the long-term planning horizon represents plans to serve load – i.e., the electric energy requirements of MCE customers – during the next ten years or longer; 2) the medium term planning horizon represents planning during the next five years; and 3) the short term planning horizon represents the plan for meeting load during the next twelve months. In contrast, the operating horizon represents the period of time from next hour to

approximately 90 days out – during this period all or virtually all resource commitments have been made and only adjustments are necessary to address short term operating variability related to weather and other uncertainties. While long term plans will have a combination of firm resource commitments and unfilled or “open” resource needs that have been identified, resource commitments increasingly become firm and converge with the planned resource commitments as the operating horizon approaches.

MEA policy, established by MEA’s founding documents and directed on an ongoing basis by the MEA Board of Directors, guides the resource plan and the ensuing resource procurement activities that are conducted in accordance with the plan. The key policies are as follows.

MEA will:

- ❑ Reduce emissions of green-house gasses and other pollutants from the electric power sector through increased use of renewable energy resources and reduced reliance on fossil-fueled resources.
- ❑ Maintain competitive electric rates and increase control over energy costs through management of a diversified resource mix.
- ❑ Benefit the area’s economy through investments in local infrastructure and energy programs.
- ❑ Help customers reduce energy consumption and electric bills through investment in and administration of enhanced customer energy efficiency, cost effective distributed generation and other demand-side programs.
- ❑ Enhance system reliability through investment in supply and demand-side resources.

This plan translates these broad policy objectives into more specific plans for the use of various types of electric resources, taking into consideration MEA’s projected customer needs and MEA’s existing resource commitments.

## **Electric Sales Forecast**

MEA’s long term sales forecast is primarily influenced by certain structural or macro variables related to the number of customers receiving service in the Marin Clean Energy program. These macro variables include the potential for expansion of MEA’s membership to other communities, with the planned expansion to the City of Richmond being the most recent example, and customer participation/opt-out rates. These macro variables are the primary driver of the load forecast and they dominate the effects of the usual load influencing micro variables related to weather, economic cycles, population growth, and changes in customer consumption patterns. The long term load forecast incorporates the impacts of the macro variables as well as seasonal electricity consumption patterns of MEA’s customer base, while the other, micro variables are considered in MEA’s short term operational load forecasts used for day-to-day scheduling of load and resources.

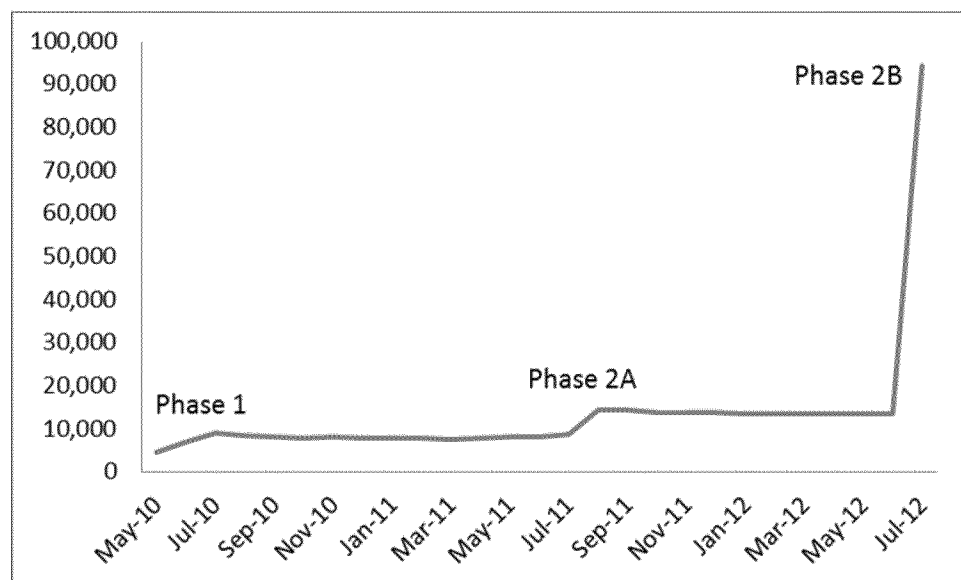
## Enrolled Customers

With the recently completed Phase 2B enrollments in July, 2012, MEA currently serves approximately 95,000 customers. The planned expansion of service to customers within the City of Richmond will add an estimated 30,000 customers by the end of July, 2013. No additional membership expansion is contemplated at this time, although such expansions may take place during the ten-year planning horizon if decided by the MEA Board. The resource planning effects of any additional membership would be addressed during the time that any such expansion is being considered and reflected in a future update of the resource plan.

Historical customer participation rates experienced since the initial customer enrollments in May, 2010, as measured by the proportion of customers who have been offered service and who remain enrolled with MEA, have averaged approximately 80%. The vast majority of customer “opt-outs” have occurred in the period prior to enrollment and within 120 days following enrollment during which time multiple notices are provided to all customers explaining their service options and providing the mechanism by which customers can elect to remain with or return to PG&E bundled generation service. Following the initial opt-out period, MEA’s customer base shows significant stability, with new customers generally offsetting customer attrition.

Figure 2 shows the recorded numbers of active customers since the Phase 1 launch in May, 2010. The customer base shows considerable stability between the phased expansions that occurred in May, 2010 (Phase 1A), July, 2010 (Phase 1B) and August, 2011 (Phase 2A). The downward trend immediately following the Phased enrollments is an indication of customer opt-outs which gradually taper off during the post enrollment period.

Figure 2: Active Marin Clean Energy Customers



A customer participation rate of 70% is being used to adjust the load forecast for the Phase 2B expansion and for the planned expansion to customers in the City of Richmond. The lower participation



rate reflects recent customer enrollment data that was likely influenced by the more visible opt-out noticing process that was deployed with Phase 2B.<sup>1</sup> Once the phased customer enrollment process is complete, the load forecast assumes a stable customer base.

### **Deep Green Program Participation**

MEA offers a voluntary 100% renewable energy option for customers through its Deep Green program, and participation in the Deep Green program determines the incremental renewable energy volumes that must be procured to supply these customers. The energy requirements of Deep Green customers are supplied from MEA's portfolio of renewable energy resources and through incremental purchases of Green-e Energy certified renewable energy certificates to achieve an overall 100% renewable energy content for the Deep Green product. Currently, 1,100 customers have enrolled in the Deep Green program, equating to 1% of all MEA customers. The participation rate has dropped from 8% just prior to the recent enrollment of approximately 80,000 Phase 2B customers, many of whom are expected to join the Deep Green program as program awareness grows. The expected Deep Green participation rate during the planning period is expected to grow to 5% as MEA continues to market this program to its customers.

### **Baseline Customer and Consumption Forecast**

MEA's electricity forecast starts with a forecast of customers by end-use classification (residential, commercial, etc.). Class-typical monthly energy consumption, derived based on historical data, is applied to yield a monthly energy forecast by customer class. Hourly class load profiles are used to further break down the monthly energy forecast into hourly values in order to derive time-of-use and peak demand values. Certain adjustments are then made to this base forecast to account for factors not reflected in the historical data. MEA makes explicit adjustments to this forecast to account for the load impacts of its energy efficiency, net energy metering and demand response programs.

### **Energy Efficiency**

As referenced in the MEA Implementation plan, studies have indicated that a reasonable long-term goal for energy efficiency programs in MEA's service area is to reduce overall annual energy consumption by approximately 2%. Achieving this level of savings will require development of specific programs, the requisite funding, and time to deploy the efficiency measures.

MEA has developed specific programs for 2012-2014 and has requested funding through the CPUC from the share of energy efficiency program funds collected from customers in the service area. These programs represent MEA's initial efforts to provide energy efficiency services and will be expanded as experience is gained and additional opportunities are identified during the planning period.

### **Net Energy Metering Program**

MEA provides among the strongest incentives in the nation to promote customer-sited distributed generation through its Net Energy Metering (NEM) program. The MEA NEM program pays eligible

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<sup>1</sup> The customer noticing process in Phase 2B differed somewhat from that used in the earlier phases in that the Phase 2B process used a higher profile format for the initial customer notices (letter vs. postcard) and an additional, fifth customer notice was voluntarily provided following the four statutorily required customer notices.

customer-generators the full retail rate normally applicable to the customer's consumption plus an additional 1 cent per kWh incentive for any surplus energy production. There are currently more than 1,900 customers subscribing to the NEM program, representing approximately 5,700 KW (5.7 MW) of local renewable generation. MEA anticipates increasing NEM participation to approximately 20,000 KW (20 MW) over the next ten years. During the planning period, management will periodically evaluate MEA's NEM program to balance the achievement of MEA's long-term distributed generation goals and related impacts to MCE electric rates.

### **Demand Response Program**

MEA does not yet administer a demand response program, although MEA customers are eligible for many of the programs administered by PG&E, and MEA receives corresponding capacity credits that are allocated by the CPUC and which reduce MEA's need to procure resource adequacy capacity. Currently, DR programs provide 2% of MEA's resource adequacy requirements. MEA's goal for the planning period is to meet 5% of its total capacity requirements through demand response programs that will be operated directly by MEA or through utility administered programs for which MEA customers are eligible.

### **Resources**

This section discusses MEA's resource needs during the planning period taking account of the projected energy requirements of MEA's customers and the existing contractual resource commitments that MEA has secured to date. The MEA supply portfolio consists of a variety of generation resource types that are designed to be responsive to MEA's expressed policies as well as relevant regulatory requirements governing MEA's operations.

### **Existing Resource Commitments**

MEA has entered into fourteen separate power purchase commitments for conventional and renewable energy, unbundled renewable energy certificates (RECs), and resource adequacy capacity. The existing resource commitments are described below.

#### *Shell Energy North America (SENA), energy, capacity, renewable energy, scheduling services*

The SENA agreement and associated confirmations (3 confirmations) provides for SENA to supply scheduling coordinator services for MEA and specified volumes of energy, capacity, and renewable energy. The confirmations extend through 2017 for energy and scheduling services, 2015 for capacity and 2016 for renewable energy. The SENA agreement initially covered all of MEA's resource requirements and will continue to do so until energy deliveries from other MEA contracts begin. SENA supplied volumes will be reduced as energy from other MEA power purchase agreements come online.

#### *G2 Energy LLC Landfill Gas to Energy, renewable energy, capacity*

The G2 agreement extends for a twenty-year term from commercial operation of a new, 1.6 MW landfill gas to energy project which will be added to an existing 1.6 MW generation project located in Wheatland, California. MEA will schedule and take delivery of energy production from both engines and

receive the associated renewable and capacity attributes. Energy deliveries are projected to average approximately 25,000 MWh per year during the term. The expected online date is January, 2013.

*Cottonwood Solar LLC, renewable energy, capacity*

The Cottonwood agreement extends for a twenty-five year term from commercial operation of a new 30 MW PV project located in Kings County, CA and a new 1 MW project located within Marin County. MEA will schedule and take delivery of energy production from these facilities and receive the associated renewable and capacity attributes. Energy deliveries are projected to average 54,000 MWh per year during the term. The expected online date is April, 2014.

*Rio Solar 1 LLC*

The Rio Solar 1 agreement extends for a twenty year term from commercial operation of a new 15 MW PV project located in Kern County, CA. MEA will schedule and take delivery of energy production from these facilities and receive the associated renewable and capacity attributes. Energy deliveries are projected to average 36,000 MWh per year during the term. The expected online date is March, 2013.

*US Western Area Power Administration*

Under the agreement with Western, MEA will receive a specified allocation of hydro-electric energy produced by the federal Central Valley Project. Deliveries will commence in January, 2015 and continue for a ten year term. Energy deliveries are projected to average 20,000 MWh per year during the term.

*San Rafael Airport Feed-In Tariff Project, renewable energy, capacity*

The San Rafael Airport FIT agreement extends for a twenty-year term from commercial operation of a new 1 MW PV project located in San Rafael, California. Energy deliveries will offset MEA load and are projected to average 1,700 MWh per year during the term. The expected online date is October, 2012.

*Genpower LLC, renewable energy, capacity*

The Genpower agreement extends for a twenty-year term from commercial operation of a new, 2.4 MW landfill gas to energy project which will be added to an existing 2.4 MW generation project located in Lincoln, California. MEA will take delivery of energy production from both engines and receive the associated renewable and capacity attributes. Energy deliveries are projected to average approximately 34,000 MWh per year during the term. The expected online date is April, 2013.

*OneEnergy, Inc, renewable energy certificates*

The OneEnergy agreements (two master power purchase agreements) and associated confirmations (three confirmations) provide for delivery of RPS qualifying and Green-e Energy certified renewable energy certificates during 2012 and 2013 from one or more wind facilities located within the Western Electric Coordinating Council region. RPS eligible volumes are 15,000 MWh and 38,000 MWh for 2012 and 2013, respectively. Green-e Energy certified volumes are 125,000 MWh and 250,000 MWh for 2012 and 2013, respectively.

### *Middlefork Irrigation District, renewable energy certificates*

The Middlefork ID agreement and associated confirmation provides for delivery of RPS qualifying renewable energy certificates during 2012 and 2013 from a hydro-electric facility located near Mt Hood, Oregon. Volumes are 20,000 MWh and 22,000 MWh for 2012 and 2013, respectively.

### *3 Degrees Group, Inc, renewable energy certificates*

The 3 Degrees agreement and associated confirmation provides for delivery of Green-e Energy certified renewable energy certificates during 2011 and 2012 from one or more wind facilities located within the Western Electric Coordinating Council region. Volumes are 8,000 MWh and 10,000 MWh for 2011 and 2012, respectively.

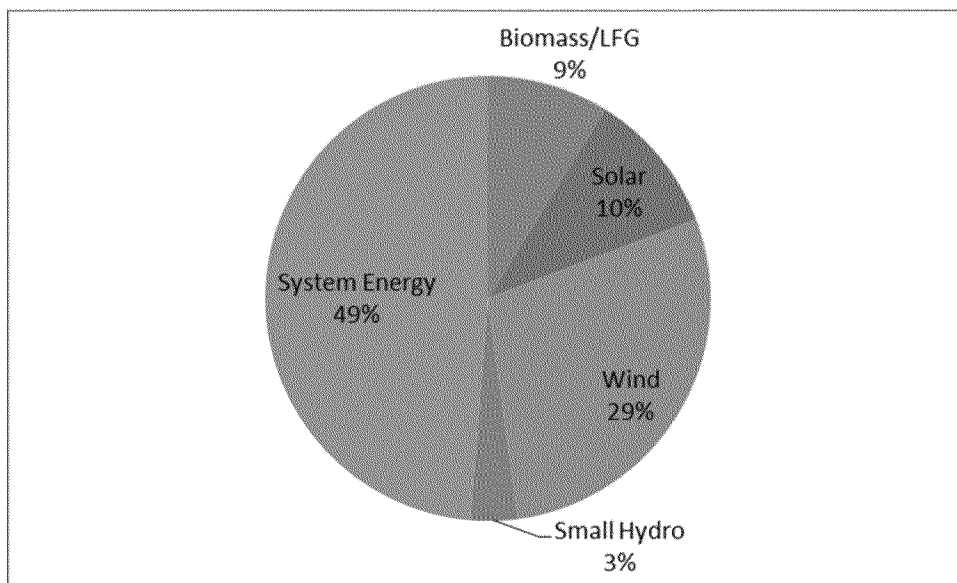
### *RE Kansas LLC, renewable energy, capacity*

The RE Kansas agreement extends for an approximately two year term from commercial operation of a new 20 MW PV project located in Kings County, CA. MEA will schedule and take delivery of energy production from these facilities and receive the associated renewable and capacity attributes. Energy deliveries are projected to average 49,000 MWh per year during the term. The expected online date is January, 2016.

## **Current Resource Mix**

MEA's current resource mix includes the highest proportion of renewable energy (51%) of any known utility in California. Figure 3 shows the current mix of resources attributable to the Marin Clean Energy Program.

Figure 3: Marin Clean Energy 2012 Resource Mix [estimated]



## **Resource Needs**

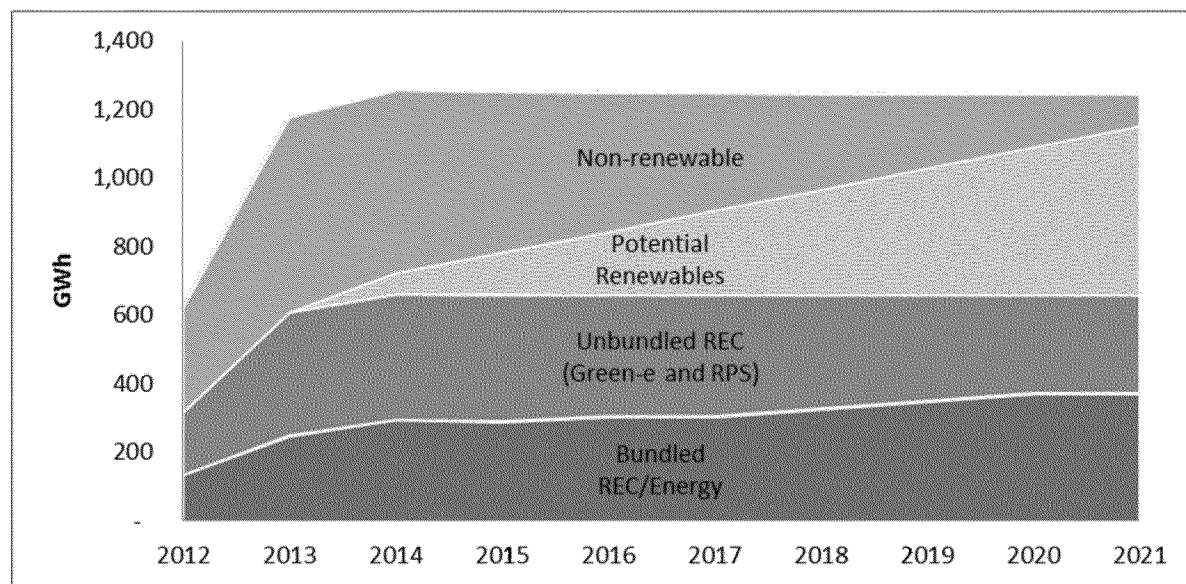
MEA will procure additional resources to meet its resource targets. This section sets forth MEA's planned resource volumes and quantifies the net resource need or "open position" that remains after accounting for production from MEA's existing resource portfolio. MEA has established resource

targets for the supply portfolio’s overall renewable energy content as well as subcategories of renewable energy procurement, carbon neutral renewable resources, capacity resources, and other system resources.

### Renewable Resources

MEA has committed to providing all of its customers with energy that meets a minimum 50% overall renewable energy content; incremental renewable energy supply will also be procured to ensure that the energy requirements of all customers participating in the Deep Green program will be served with 100% renewable energy. MEA’s renewable energy requirements are met with a combination of RPS-eligible contracts and Green-e Energy certified REC purchases. As Figure 4 illustrates, the proportion supplied by bundled renewable energy will increase during the planning period and displace purchases of unbundled RECs, while maintaining an overall 50% renewable energy content. Additional bundled renewable energy sources (Potential Renewables), as of yet unplanned, may contribute towards meeting MEA’s long term goal of 100% renewable energy supply.

Figure 4: Marin Clean Energy Renewable and Non-renewable Energy Volumes, 2012-2021



### RPS Requirements

MEA’s power content exceeds the state’s RPS requirements and will continue to do so during the planning period. The RPS requirements can be met with a variety of renewable resource technology types and procurement methods. The RPS requirements ramp up from 20% to 33% by 2020. Eligible resources currently include the following:

- Biodiesel
- Biogas
- Biomass
- Conduit hydroelectric
- Digester gas
- Fuel cells using renewable fuels

- Geothermal
- Hydroelectric incremental generation from efficiency improvements
- Landfill gas
- Municipal solid waste
- Ocean wave, ocean thermal, and tidal current
- Photovoltaic
- Small hydroelectric (30 megawatts or less)
- Solar thermal electric
- Wind

RPS compliance can be met with procurement from renewable resources located within or deliverable to the state (“Bucket 1”), and with certain quantity limitations, procurement of shaped and firmed renewable energy (“Bucket 2”) and unbundled RECs from RPS qualifying resources (“Bucket 3”).

MEA has a committed supply of RPS qualifying renewable resources to meet a 27% RPS standard, well in excess of the currently applicable RPS requirement of 20% and equivalent to the RPS standard that will be in effect in 2017. MEA plans to increase its RPS qualifying content to at least 33% by 2020 and to obtain an overall renewable energy content of at least 55% during this timeframe. MEA intends to continue exceeding the environmental performance standards mandated by state regulations with respect to renewable energy and GHG emissions.

#### *RPS Open Positions*

MEA has focused its procurement efforts on long term power purchase agreements with new RPS qualifying generation facilities located within the state. These are the highest value, Bucket 1 resources. In accordance with state regulations, a minimum of 50% of RPS procurement used for compliance must meet the established requirements for Bucket 1, which for most practical purposes means use of bundled energy from California sited renewable power plants. Existing Bucket 1 resources are in limited supply, and it typically takes from three to five years to construct a new utility-scale renewable generation project. **MEA has contracted for all of its Bucket 1 RPS needs through 2016 and has an open need for Bucket 1 resources beginning in 2017.** This provides sufficient lead time for construction of new generation to meet MEA’s future needs.

MEA engages in shorter term procurement for the more readily available Bucket 2 and Bucket 3 resource purchases. **As shown in Table 1, MEA has no significant RPS compliance procurement need until 2017.**

Table 1: Marin Clean Energy RPS Compliance Energy Balance, 2012-2021

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Retail Sales (GWh)	619	1,175	1,256	1,251	1,248	1,248	1,245	1,245	1,245	1,245
RPS %	20%	20%	22%	23%	25%	27%	29%	31%	33%	33%
RPS Energy Required (GWh)	124	235	272	292	312	337	361	386	411	411
RPS Energy Contracted (GWh)	172	312	295	291	305	197	148	148	148	148
Net Short/(Long)	(48)	(77)	(23)	1	7	140	213	238	263	263

### *Voluntary Renewable Open Positions*

Voluntary renewable energy purchases are in excess of the RPS requirements. Voluntary renewable energy purchases represent the amount of procured renewable energy that is above the RPS and used to meet the program's overall renewable energy content (> 50%) in providing the Light Green and Deep Green products to MEA customers. These requirements are generally met with short term purchases of unbundled Green-e Energy certified RECs. **The majority of voluntary renewable energy needs for 2012 and 2013 have been filled with only a small open position remaining. The entire requirement is open beginning in 2014.**

Table 2: Marin Clean Energy Voluntary Renewable Energy Balance, 2012-2021

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Energy Required (GWh)	148	288	320	319	318	318	293	268	243	243
Energy Contracted (GWh)	135	250	-	-	-	-	-	-	-	-
Net Short/(Long)	13	38	320	319	318	318	293	268	243	243

### **Carbon Neutral Resources**

MEA policy targets the carbon neutral energy content of the MEA generation supply portfolio to be less than or equal to the carbon neutral energy content of the PG&E generation supply portfolio. MEA utilizes the Climate Registry definition of carbon neutral resources.

### **Capacity Resources**

MEA meets the state's resource adequacy standards by procuring qualifying capacity necessary to meet MEA's overall peak demand plus a 15% reserve margin and by ensuring that the mandated proportion of such capacity resources are procured from local reliability areas defined by the CAISO. **MEA has commitments for the entirety of its resource adequacy capacity requirements through 2014 and a portion through 2015.** In addition, MEA has long term capacity rights under several of its power purchase agreements with renewable generators that provide a portion of MEA's post 2014 local resource adequacy needs.

Table 3: Marin Clean Energy Resource Adequacy Capacity Balance, 2012-2021 (MW)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Load</b>										
Peak Demand	193	246	246	246	246	246	246	246	246	246
DG and Efficiency	(6)	(20)	(23)	(25)	(26)	(27)	(27)	(27)	(27)	(27)
Net Peak Demand	187	226	223	220	220	218	218	218	218	218
<b>RA Requirements</b>										
Greater Bay Area	39	47	46	45	45	45	45	45	45	45
Other PG&E Area	42	50	50	49	49	49	49	49	49	49
System	135	162	160	159	158	157	157	157	157	157
<b>RA Contracted</b>										
Greater Bay Area	39	47	46	26	2	2	2	2	2	2
Other PG&E Area	42	50	50	38	33	33	20	20	20	20
System	135	162	160	64	-	-	-	-	-	-
<b>Net Short/(Long)</b>										
Greater Bay Area	-	-	-	19	44	43	43	43	43	43
Other PG&E Area	-	-	-	11	17	16	29	29	29	29
System	-	-	-	95	158	157	157	157	157	157

### System Energy

The remaining energy supply, after accounting for renewable and carbon neutral energy supplies, can be met with unspecified system energy purchases or specified purchases of conventional (typically natural gas) generation. MEA policy prohibits unit-specific purchases from coal or nuclear generation facilities. MEA supplies its remaining load through a combination of short to medium-term fixed priced power purchases and short term purchases from the CAISO markets. **MEA has contracts in place to supply approximately 95% of its load at fixed prices through the end of 2017.** The remaining approximately 5% is met through CAISO market purchases. Significant system resource procurement needs exist for 2018 and beyond, when the SENA energy confirmation is scheduled to terminate.

Table 4: Marin Clean Energy System Energy Balance, 2012-2021 (GWh)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Load</b>										
Retail Sales	621	1,210	1,301	1,301	1,301	1,301	1,301	1,301	1,301	1,301
DG and Efficiency	(2)	(35)	(45)	(50)	(53)	(53)	(56)	(56)	(56)	(56)
Distribution Losses	37	71	75	75	75	75	75	75	75	75
Total Load Requirement	656	1,246	1,331	1,326	1,323	1,323	1,320	1,320	1,320	1,320
<b>Less Renewables/Carbon Free</b>										
Planned Renewables (bndld.)	135	248	294	289	303	303	325	347	370	370
Planned Carbon Free	0	0	0	25	25	25	25	25	25	25
Total CF Bundled Energy	135	248	294	314	328	328	350	372	395	395
System Energy Requirement	521	998	1,037	1,012	995	994	970	947	925	925
System Energy Contracted	487	918	977	960	943	920	-	-	-	-
Net Short/(Long)	34	80	60	52	52	74	970	947	925	925
System Energy Net Short/(Long)	34	80	60	52	52	74	970	947	925	925

### Procurement

MEA will procure its net open positions using a combination of power purchase agreements of various terms (short, medium, long), demand-side programs, and potentially MEA owned generation projects. This section describes the types of resources MEA may procure and discusses various considerations that may influence MEA's procurement efforts.



MEA is continuing a transition from the initial full requirements contract that was used to launch MCE, under which all supplies of energy, capacity and renewable energy were provided through a single agreement with a single counterparty. Subsequent to that initial contract, MEA has put into place a robust renewable energy buying program that now supplies the majority of the MCE renewable energy supplies from a variety of renewable energy providers. MEA is similarly developing an independent buying program for non-renewable energy and capacity. MEA intends to soon initiate the non-renewable resource buying program with purchases of resource adequacy capacity to begin filling its 2015 open positions. A non-renewable energy buying program will also be put into place during the next few years to begin filling the 2018 open energy positions.

### **MEA Generation Development**

MEA does not currently own any generation assets. MEA has used long term power purchase agreements (typically 20-25 years) to obtain rights to renewable energy supplies at stable costs for its customers. MEA considers long term PPAs to offer similar benefits to asset ownership in regards to price certainty and supply security; however MEA does not have an explicit bias towards either PPAs or asset ownership. MEA examines opportunities for asset ownership on a case-by-case basis, considering such factors as risk allocation, asset location, technology, and, most critically, supply of electricity at the least cost to MEA ratepayers.

Current federal tax policy generally favors private versus public ownership of renewable assets due to the tax credits that are uniquely available to the private sector. MEA's experience has been that power purchase agreements for production by privately owned renewable generation facilities have typically been the least cost option for MEA. MEA has secured buyout option provisions in some of its renewable power purchase agreements, which provide a path to MEA asset ownership after a defined period of time when the tax benefits have been exhausted by the private developer. MEA will typically seek buyout option provisions in its renewable power purchase agreements, although not all projects are suitable for acquisition, and not all PPAs will contain such provisions.

Assessing a generation project's operational risk becomes more important for assets owned by MEA because MEA could be at risk for production shortfalls and for cost over-runs, risks typically absorbed by the developer under a PPA structure. With these risks in mind, MEA is most likely to own small, local photo-voltaic projects as these projects are technologically proven, have relatively low operational and maintenance risks, and provide benefits to the local economy. MEA is targeting development of 10 MW of new PV within its service territory during the next ten years.<sup>2</sup> MEA may invest directly in these projects as necessary to ensure development of certain project opportunities that will promote the achievement of MEA's expressed goals and objectives. MEA may consider ownership of other generation projects and will examine such opportunities on a case-by-case basis. Direct generation investment becomes an increasingly viable option during the planning period as MEA gains additional operational experience and more robust access to credit markets. As part of this approach, MEA may

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<sup>2</sup> The 10 MW local PV target is in addition to the 14 MW of distributed generation installed under the NEM program.

also consider joint ventures and turnkey development approaches to ensure appropriate allocation of project risks.

### Renewable Resource Power Purchases

MEA uses a portfolio risk management approach in its power purchasing program, seeking low cost supply as well as diversity among technologies, production profiles, generation project sizes, project locations, counterparty, length of contract and timing of market purchases. These factors are taken into consideration when MEA engages the market.

MEA continually manages its forward load obligations and supply commitments with the objective of balancing cost stability and cost minimization, while leaving some flexibility to take advantage of market opportunities or technological improvements that may arise. MEA monitors its open position separately for renewable resources (by compliance category), conventional resources, and on a total portfolio basis. MEA maintains portfolio coverage targets of up to 100% in the near-term (0 to 5 years) and leaves a greater portion open in the mid to long term, consistent with generally accepted industry practice.

Generally, the renewable portion of the portfolio is met with longer term contracts, providing cost stability for the supply portfolio. MEA’s guidelines for long term, bundled renewable energy purchases are shown in Table 5.

Table 5: Marin Clean Energy Renewable Energy Contracting Guidelines

<b>Time Horizon</b>	<b>Contracting Guideline (Contracts/Total RE Need)</b>
<b>Current Year</b>	90% to 100%
<b>Years 2 – 3</b>	80% to 100%
<b>Years 4 – 5</b>	60% to 100%
<b>Beyond Year 5</b>	50% to 80%

MEA’s supply preference is for a mix of renewable energy technologies that will deliver energy in a pattern that is generally consistent with MEA’s load shape. Preferred purchase volumes from baseload (e.g., biomass, landfill gas, renewable fuel cells) and peaking renewable technologies (e.g., solar PV or CSP) is in rough proportion to the load profile (75% baseload/25% peaking), subject to adjustments for market conditions and technology price differentials that exist at the time of purchase. Recent market data suggests that peaking resources are likely to comprise a larger proportion of the renewable supply portfolio due to the recent rapid declines in prices for solar PV generation projects and the abundance of such projects in development. The actual renewable portfolio during the planning period will likely be more heavily weighted toward peaking energy production due to the prevalence of competitively priced solar projects. MEA may also engage in purchases from as-available renewable generation (e.g., wind) to the extent that energy prices reflect a lower value due to their intermittency.

MEA has no explicit policy preference for any specific qualifying renewable energy technology, apart from the pricing and production profile considerations described above.

In regards to generation project location, MEA places greater value on locally-sited renewable energy projects, particularly those located within the MEA service area. Of next highest preference are projects sited in the North Path 15 region followed by projects in the South Path 15 region and finally out-of-state resources.

### **Feed In Tariff**

MEA's current Feed-In Tariff (FIT) program was established as a pilot program and is currently capped at 2 MW in aggregate capacity, with 1 MW currently under contract. MEA anticipates conducting a review of the FIT program once the cap is reached. Along with other refinements that may be made, it is likely that the cap will be increased to 10 MW or more as part of that programmatic review. This expansion will support achievement of MEA's local renewable generation development objectives.

### **Carbon Neutral Resource Power Purchases**

MEA anticipates that its carbon neutral power content standard will be met through MEA's renewable procurement policies, supplemented as necessary with short term (< 1 year) purchases of carbon neutral energy sources such as large hydro-electric energy, unbundled renewable energy certificates, or verifiable environmental credit offset products. As previously noted, MEA will not engage in unit-specific purchases of nuclear power to meet its carbon neutral content policy.

### **System Resources and Specified Power Purchases**

MEA may engage in purchases of unspecified system energy or unit specific purchases from natural gas-fueled generation. Energy products may include peak, off-peak, baseload, and shaped energy. MEA may purchase energy and/or capacity at fixed prices, indexed prices or through tolling agreements. Under a tolling agreement, MEA would obtain the right to electricity produced by a natural gas generation facility, and MEA would deliver the natural gas to the facility for conversion into electrical energy. Purchases of system energy will typically be for short and medium terms (< 5 years). Unit-specific and tolling agreements may be for short, medium and long terms. Natural gas purchases associated with tolling agreements will typically be for short to medium terms.

MEA expects to contract with additional counterparties for supply of system energy and capacity in anticipation of the termination of the SENA agreement. Execution of master power purchase and sale agreements with multiple, credit-worthy counterparties in the near term will enable energy purchases through execution of transaction-specific confirmations at the appropriate time.

### **Capacity Resource Purchases**

MEA may engage in purchases or sales of resource adequacy capacity from generation resources that qualify to meet resource adequacy requirements in accordance with CPUC and CAISO rules. Terms may range from 1 month up to ten years. Capacity is also often bundled with energy and RECs under MEA's renewable energy power purchase agreements.

## **Procurement Methods and Authorities**

MEA may use a variety of procurement methods for energy and capacity products. Authorized methods include bilaterally negotiated agreements, competitive solicitations (request for proposals), the Open Season, and standard offer approaches, such as MEA's Feed-In Tariff.

Energy procurement authority varies depending upon the nature of the energy product being procured and the financial commitment the purchase entails. The appropriate procurement method and procurement authority are generally defined by the term of the energy product purchase, consistency with an approved resource plan, and whether capital financing is required.

### **Procurement Methods**

For long term purchase commitments, MEA will typically use competitive solicitations which may take the form of an RFP, the Open Season or a similar process where a comparative analysis of proposals is made at a single point in time. A RFP may be used where a specific resource need has been identified, some degree of urgency exists in fulfilling the identified need, sufficient time exists to conduct an RFP, and management believes that an RFP would yield the most competitive outcome. For less urgent procurement needs, the annual Open Season will typically be used. MEA annually conducts an Open Season where it accepts proposals for renewable power purchase opportunities. MEA evaluates the proposals against each other and in the context of other market information available to MEA and may elect to negotiate power purchase agreements with any number of respondents.

Bilaterally negotiated agreements in response to unsolicited proposals may be used for unique opportunities that are fleeting in nature such that timelines associated with an RFP or the Open Season process would prevent MEA from engaging in beneficial procurement opportunities.

Short and medium term power purchases will typically be negotiated on a bilateral basis or via independent energy brokers, particularly in markets with sufficient market price transparency to ensure competitive procurement outcomes. These markets include 1) system energy at a defined CAISO trading hub for peak, off-peak, or baseload products; 2) unbundled RECs; and 3) short term resource adequacy capacity. This process allows for maximum operational flexibility to manage supply and demand imbalances in an efficient manner.

### **Procurement Authorities**

The MEA Board of Directors establishes procurement policies and objectives through adoption of the resource plan. The MEA Executive Officer is authorized to execute certain contracts for energy products that are consistent with the approved resource plan, while other resource commitments require MEA Board pre-approval prior to execution.

For shorter term power purchases, it is appropriate for management to have discretion in contracting, consistent with its responsibilities and expertise in efficiently operating the MCE program. Time is often of the essence in such transactions, and these transactions are unlikely to raise policy considerations that require Board input. For long-term commitments, it is appropriate for the MEA Board to exercise a greater degree of oversight. The various energy procurement authorities are as follows:

**Short-term contracts**

Power purchase agreements (energy, capacity, RECs) with terms of 12 months or less may be entered into on MEA's behalf by the Executive Director. The Executive Director will report all such contracts to the MEA Board on a monthly basis.

**Medium-term contracts**

Power purchase agreements (energy, capacity, RECs) with terms of greater than 12 months and less than or equal to 5 years and which are made pursuant to a Board approved resource plan may be entered into on MEA's behalf by the Executive Director in conjunction with the MEA Board Chair. An committee of the MEA Board will be consulted prior to execution of any medium-term contracts. The Executive Director will report all such contracts to the MEA Board on a monthly basis.

**Long-term contracts**

Power purchase agreements (energy, capacity, RECs) with terms of greater than 5 years shall require Board approval prior to execution.

**Capital Projects and Debt**

Contracts associated with MEA ownership of generation assets or the assumption of debt by MEA in support of generation projects or power purchase agreements require MEA Board pre-approval.

**Other Energy Procurement**

Any procurement of energy products that is inconsistent with or that is not addressed in the adopted resource plan requires MEA Board pre-approval.

# Appendix A: Load and Resource Tables

Marin Clean Energy Resource Balance										
Oct 12										
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Energy Requirements (GWh)</b>										
Retail Load (Net of EE/DG)	619	1,175	1,256	1,251	1,248	1,248	1,245	1,245	1,245	1,245
Distribution Line Losses and Unaccounted For Energy	37	71	75	75	75	75	75	75	75	75
<b>Total Energy Requirements</b>	<b>656</b>	<b>1,246</b>	<b>1,331</b>	<b>1,326</b>	<b>1,323</b>	<b>1,323</b>	<b>1,320</b>	<b>1,320</b>	<b>1,320</b>	<b>1,320</b>
<b>Renewable Energy Content(%)</b>										
RPS Qualifying	27%	27%	27%	27%	27%	27%	29%	31%	33%	33%
Bucket 1 Minimum Limits	50%	50%	65%	65%	75%	75%	75%	75%	75%	75%
Bucket 2 Maximum Limits	50%	50%	35%	35%	25%	25%	25%	25%	25%	25%
Bucket 3 Maximum Limits	25%	25%	15%	15%	10%	10%	10%	10%	10%	10%
Deep Green Participation	2%	3%	5%	5%	5%	5%	5%	5%	5%	5%
<b>Overall MCE Renewable Energy Content (RPS and Voluntary)</b>	<b>51%</b>	<b>52%</b>	<b>53%</b>	<b>53%</b>	<b>53%</b>	<b>53%</b>	<b>53%</b>	<b>53%</b>	<b>53%</b>	<b>53%</b>
<b>Renewable Energy Requirements( GWh)</b>										
Baseline (SENA P1)	39	39	39	14	-	-	-	-	-	-
Bucket 1 (Bundled, In-State)	64	139	195	210	253	253	271	289	308	308
Bucket 2 (Bundled, Firmed and Shaped)	32	70	60	65	51	51	54	58	62	62
Bucket 3 (REC Only)	32	70	45	49	34	34	36	39	41	41
<b>Subtotal, RPS Renewable Energy Requirements</b>	<b>167</b>	<b>317</b>	<b>339</b>	<b>338</b>	<b>337</b>	<b>337</b>	<b>361</b>	<b>386</b>	<b>411</b>	<b>411</b>
<b>Voluntary Renewable Energy Certificate Requirements( GWh)</b>										
Light Green Volume	142	270	289	288	287	287	261	237	212	212
Deep Green Incremental Volume	6	18	31	31	31	31	31	31	31	31
<b>Subtotal, Voluntary RECs</b>	<b>148</b>	<b>288</b>	<b>320</b>	<b>319</b>	<b>318</b>	<b>318</b>	<b>293</b>	<b>268</b>	<b>243</b>	<b>243</b>
<b>Conventional Energy Requirements (includes energy bundled with Bucket 3)</b>	<b>521</b>	<b>998</b>	<b>1,037</b>	<b>1,037</b>	<b>1,020</b>	<b>1,019</b>	<b>995</b>	<b>972</b>	<b>950</b>	<b>950</b>
<b>Existing and Planned Renewable Resources (GWh)</b>										
Baseline (SENA P1)	39	39	39	14	-	-	-	-	-	-
Bucket 1	0	0	3	2	0	0	0	0	0	0
SENA P2A	0	25	25	25	25	25	25	25	25	25
G2 Ostrom	0	0	41	54	54	54	54	54	54	54
Cottonwood	0	26	35	35	35	35	35	35	35	35
Rio Solar	65	74	58	19	0	0	0	0	0	0
SENA P2B	0	26	34	34	34	34	34	34	34	34
Genpower	0	0	0	0	46	49	0	0	0	0
RE Kansas	0	0	0	43	60	0	0	0	0	0
SENA P3	0	0	0	0	0	0	0	0	0	0
<b>Subtotal Bucket 1</b>	<b>65</b>	<b>151</b>	<b>196</b>	<b>212</b>	<b>254</b>	<b>197</b>	<b>148</b>	<b>148</b>	<b>148</b>	<b>148</b>
Bucket 2	17	13	15	6	0	0	0	0	0	0
SENA P2A	16	49	35	12	0	0	0	0	0	0
SENA P2B	0	0	10	47	51	0	0	0	0	0
SENA P3	0	0	0	0	0	0	0	0	0	0
<b>Subtotal Bucket 2</b>	<b>33</b>	<b>62</b>	<b>60</b>	<b>65</b>	<b>51</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Bucket 3	15	38	0	0	0	0	0	0	0	0
OneEnergy	20	22	0	0	0	0	0	0	0	0
Middle Fork ID	0	0	0	0	0	0	0	0	0	0
<b>Subtotal Bucket 3</b>	<b>35</b>	<b>60</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Subtotal, Existing and Planned RPS Renewable Resources</b>	<b>172</b>	<b>312</b>	<b>295</b>	<b>291</b>	<b>305</b>	<b>197</b>	<b>148</b>	<b>148</b>	<b>148</b>	<b>148</b>
<b>Existing and Planned Voluntary RECs</b>										
3 Degrees	10	-	-	-	-	-	-	-	-	-
OneEnergy	125	250	-	-	-	-	-	-	-	-
<b>Subtotal Existing and Planned Voluntary RECs</b>	<b>135</b>	<b>250</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Open Position, RPS Renewables (GWh)</b>										
Bucket 1	(1)	(12)	(1)	(2)	(1)	56	123	141	160	160
Bucket 2	(1)	8	0	(0)	(0)	51	54	58	62	62
Bucket 3	(3)	10	45	49	34	34	36	39	41	41
<b>Subtotal, Open Position, Renewables</b>	<b>(5)</b>	<b>5</b>	<b>44</b>	<b>47</b>	<b>32</b>	<b>140</b>	<b>213</b>	<b>238</b>	<b>263</b>	<b>263</b>
<b>Open Position, Voluntary RECs</b>										
	13	38	320	319	318	318	293	268	243	243
<b>Existing and Planned Conventional Resources (GWh)</b>										
SENA Phase 1 and 2A (net of bundled renewable energy)	212	215	210	72	-	-	-	-	-	-
SENA Phase 2B (net of bundled renewable energy)	275	619	599	217	-	-	-	-	-	-
WAPA Base Resource	0	0	0	25	25	25	25	25	25	25
SENA Phase 3 (net of bundled renewable energy)	-	84	168	671	943	920	-	-	-	-
<b>Subtotal, existing Conventional Resources</b>	<b>487</b>	<b>918</b>	<b>977</b>	<b>985</b>	<b>968</b>	<b>945</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>
<b>Open Position, Conventional Energy (GWh)</b>										
	34	80	60	52	52	74	970	947	925	925
<b>Total Energy Under Contract (GWh)</b>	<b>624</b>	<b>1,170</b>	<b>1,272</b>	<b>1,276</b>	<b>1,273</b>	<b>1,142</b>	<b>173</b>	<b>173</b>	<b>173</b>	<b>173</b>
<b>Net Open, All Physical Energy (GWh)</b>	<b>32</b>	<b>76</b>	<b>59</b>	<b>50</b>	<b>50</b>	<b>181</b>	<b>1,147</b>	<b>1,147</b>	<b>1,147</b>	<b>1,147</b>
<b>Total Energy Contract Coverage (%)</b>	<b>95%</b>	<b>94%</b>	<b>96%</b>	<b>96%</b>	<b>96%</b>	<b>86%</b>	<b>13%</b>	<b>13%</b>	<b>13%</b>	<b>13%</b>