

# Energy Development Services



Sustaining the future through energy development

Project Development

Entitlement Processing

Project Design

Engineering, Procurement and Construction (EPC)

Support

## Firm Profile

RBF Consulting (RBF), a Company of Michael Baker Corporation (Baker) is a multi-discipline engineering, planning, surveying and construction management firm with 3,250 employees in nearly 110 offices.

RBF plays a significant role in assisting stakeholders in the renewable energy market with environmental permitting, site feasibility, project entitlement, land surveying, engineering, construction support and other related services. Our full-service in-house capabilities provide clients with a team that understands the “big picture” and manages all project needs seamlessly. Across the company, RBF is flexible and able to integrate into our clients’ work plans.

Our strategic regional presence allows us to support clients with knowledge of unique local requirements and environmental issues to expedite project approvals. We keep a pulse on regional issues and are involved at various levels with our federal and state jurisdictional agencies, such as BLM, Army Corps of Engineers, Fish & Wildlife and the Public Utility Commissions.

With over 70 years of service to local, county, state and federal clients, we have developed strong inter-agency relationships that enable us to quickly filter viable projects and guide our clients through the complex permitting processes.

Since 2007, RBF has invested its resources in the renewable energy development market sector and we continue to expand our capabilities and expertise through strategic hiring, lateral relationships and maintaining a strong presence among key industry developers and oversight agencies.

RBF energy clients include utility providers, technology providers, utility-scale and distributed renewable energy developers, turnkey EPC teams and governmental agencies.

# What we do

## **Project Development**

- Feasibility Analyses to Identify Constraints / Opportunities
- Financial Incentive Studies
- Project Proforma / Cost Estimates
- Water Usage and Availability Studies
- Interconnection Queue / Timeline Studies
- Permitting Assessments / Development Strategy

## **Entitlement Processing**

- Jurisdictional Permitting
- Technical Studies (Visual, Air, Noise, Traffic, Biology)
- Hazardous Materials Assessments
- Natural Resources / Habitat Assessments
- CEQA / NEPA Documentation
- Regulatory Permit Applications
- Resource Agency Consultation
- Mitigation Monitoring and Reporting

## **Public Outreach**

- Public Agency Coordination
- Community Meetings / Consensus Building
- Public Information / Education Programs
- Local Stakeholder Identification

## **Structural / Electrical Engineering**

- Foundation Analysis and Design
- Interconnect Application Support
- Preliminary Engineering and Single Line Diagrams
- Final Electrical Engineering

## **Water Resources**

- Source Water Development
- Source Supply Water Quality
- Water / Recycled Water Treatment
- Piping and Pumping
- Industrial Water Conservation
- Hydraulic Energy Recovery
- Pilot-Scale Demonstration Projects

## **GIS Infrastructure Mapping**

- Facility Mapping / Inventory
- Generation Tie Line Route Analysis
- Land Acquisition / Feasibility Studies and Analysis / Mapping
- Secure Interactive Online Web Mapping

## **Land Surveying**

- Boundary Surveys / Topographic Surveys
- Rooftop Audit
- Constraints Mapping / ALTA Surveys
- Construction Layout

## **Civil Engineering**

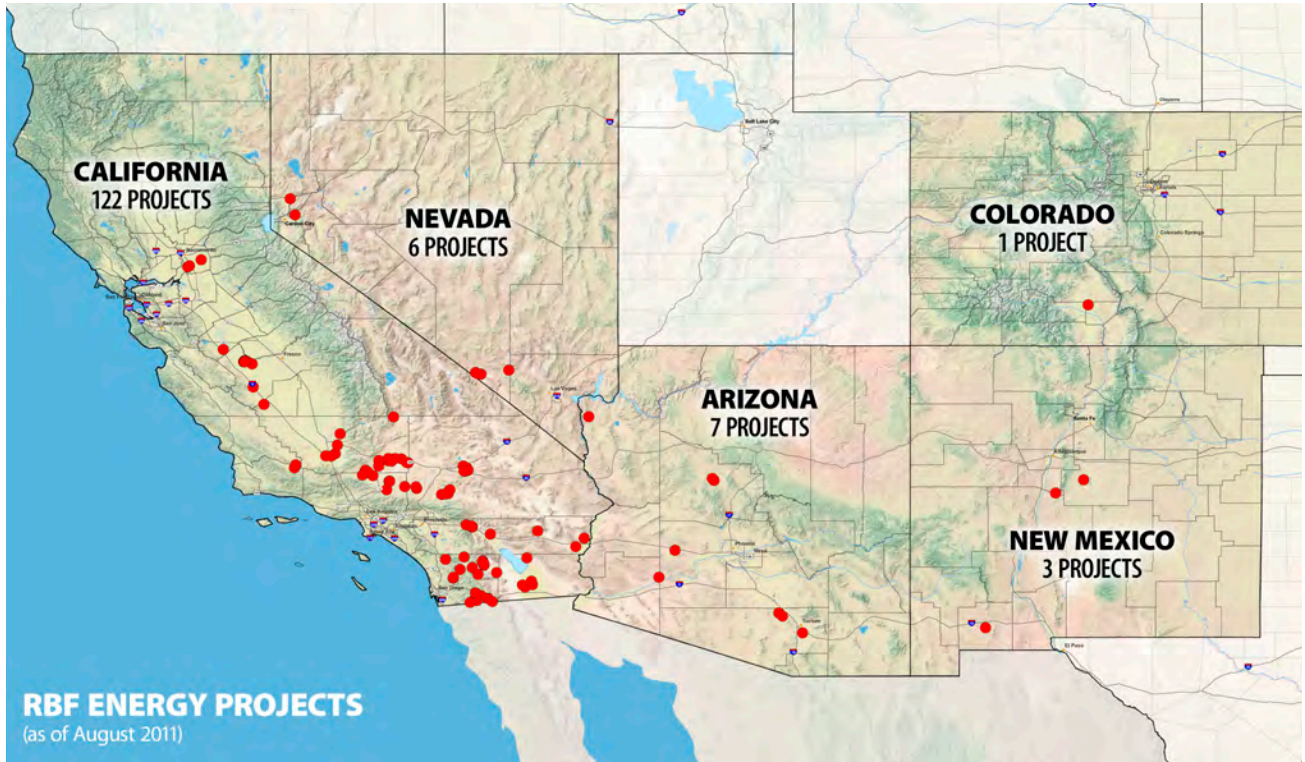
- Site Layout / Grading / Drainage Plans
- Flood Hazard and Water Quality Assessments (Hydrology) and Mitigation Design
- Construction Cost Estimates

## **EPC Support**

- Constructability Reviews
- Final Engineering
- Project Controls
- Environmental Compliance Monitoring
- Scheduling

# Energy Development Services

## Project Development



RBF's regional history, local knowledge and jurisdictional agency relationships allow us to effectively move developer projects through the approval and entitlement pipeline. RBF assists clients in evaluating the feasibility of development sites so that resources and investments are focused only on sites that are best suited for development. Once land is selected, RBF provides a site development and constraints analysis report, including high level technical studies, to determine recorded easements, hydrology, geomorphology, geotechnical, access and various environmental constraints. In addition to typical hydrology methodologies, RBF also specializes in newer methodologies that are more appropriate for the rural or remote areas many energy projects are being sited.

## Entitlement Processing / Community Outreach / Regulatory Permitting / Site Design

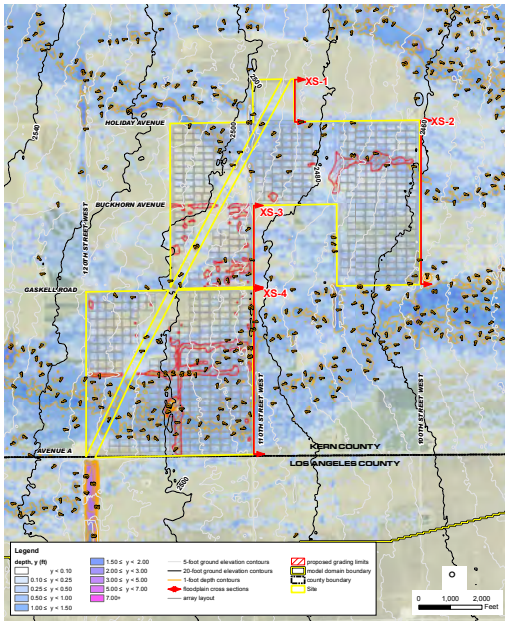


RBF Consulting supports energy developers through unparalleled experience with managing the entitlement process, the creation of technical studies and site planning, and the design for multiple renewable energy projects.

RBF has successfully assisted renewable energy developers and their public utility company partners in providing regulatory agency entitlement processing, strategy development and negotiations, public outreach and conflict resolution, water, wastewater and hydrologic / hydraulic studies, grading plans and site planning and design services.

RBF provides a complete array of entitlement and engineering design services for renewable energy clients supported by our energy design and specifications knowledge base, local engineering expertise and positive working relationships with local agencies and utility companies. RBF's experience with managing and navigating the entitlement of General Plan Amendments, Use Permits and Site Plan approvals for projects has been largely defined by conducting numerous community meetings, focus groups, workshops and political forums to garner understanding and support from adjacent residential communities, agency staff and elected officials. RBF also supports energy developers with California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) documentation and technical studies.

## Project Design



RBF is leading the way in designing large energy development sites to minimize project costs and mitigation requirements. By reviewing developer's grading and drainage concepts,

we are able to determine typical grading approaches that will be feasible from a permitting and cost perspective. Through various analyses, RBF guides energy developers away from high impact "factory floor" grading techniques toward low impact development, working with the existing features of the land. We have successfully reduced environmental impacts and mitigated site preparation and grading costs for our clients – a win-win for the developer and the environment.

RBF's project design approach is heavily dependent on comprehensive flood hazard and water quality analyses since low impact development is key to the constructability of these projects. We are working with State Water Resources Control Boards in various regions to assure only necessary and effective measures are implemented. Our experts hold positions on the State Water Resources Control Boards and are heavily involved in training and advising agencies and the development community on how to meet stormwater requirements.

Once approvals are achieved, RBF is then able to provide expert construction documentation for the project.

## Engineering, Procurement and Construction (EPC) Support



RBF provides Engineering Procurement and Construction (EPC) support for energy projects through its wide range of multi-discipline services that include civil, structural, and electrical engineering design; surveying and construction staking; mapping; construction management; environmental compliance services, and public outreach support.

Our team approach focuses on preparing accurate final plans, specifications and cost estimates for construction. Our experts familiar with regional and local requirements play a key role in efficiently moving projects through the approval process. RBF's Construction Management staff applies real world construction experience to provide quality assurance of plans, specifications and methods and to capitalize on value engineering opportunities that produce economically feasible solutions. RBF's natural resources personnel are experts in federal, state and local jurisdictional permitting regulations and requirements to assure compliance during all phases of construction.

## Solar



RBF has worked on project development for scores of projects covering over 50,000 acres of developed and undeveloped land in California, Nevada, Arizona, New Mexico and Colorado. The range of services has included site feasibility studies and due diligence; ALTA/ACSM surveys; NEPA and CEQA environmental permitting and technical studies; construction staking; and a full range of civil engineering services to include hydrology studies and drainage plans, access roads and site utilities, and complete electrical engineering assistance from initial utilities inter-connect applications to full system power and SCADA design.

RBF has experience in thin film and polycrystalline panel projects, including fixed, single axis and dual axis tracker systems; concentrated photovoltaic (CPV); and solar thermal projects, including trough and tower systems.

## Wind



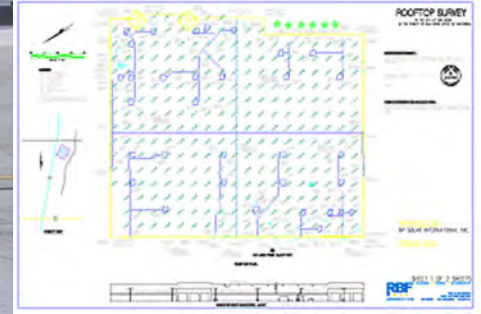
RBF Consulting provides planning and engineering services for wind energy generation facilities including wind resource and site assessments. RBF specializes in evaluating regulatory and physical constraints at due diligence level of the project development including wind resource analysis, transmission, land use planning, civil engineering, and environmental impact assessments.

Initial wind resource assessments are initially derived from mesoscale modeling based data validated by the NCEP-ADP database. Net Capacity factors for wind farms are derived using power curves from various wind turbine manufacturers.

RBF also provides local support in project approval phase as well as final engineering, survey, mapping, and construction support during the EPC process.



## Land Surveying / Laser Scanning for Rooftop Audits of Photovoltaic Projects

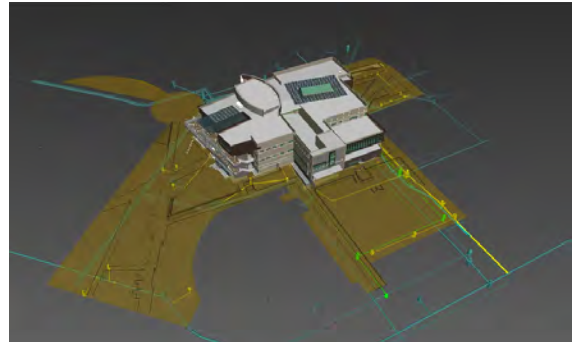
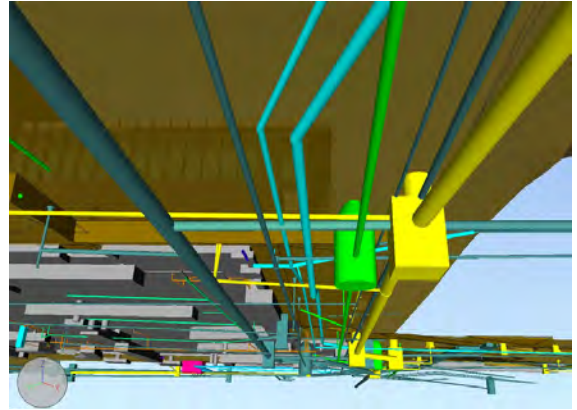


RBF provides clients with laser scanning, topographic maps, and 3D data for sun analysis on large building rooftops for design and installation of solar panels.

RBF uses a three dimensional (3D) laser scanner, referenced to geodetic coordinates with a GPS unit, to locate the parapets, air conditioning units, sky lights, vents, gas, water and electrical lines, satellite dishes, access hatches and signs. The use of the laser scanner also facilitates determining the location of adjoining buildings and trees, which could shade the rooftop.

A 3D data model is used to analyze the rooftop for the effect of sun shading from objects on the surface and surrounding area. Clients are then able to design the layout of the solar panel array on the rooftop for optimal power output.

## Geothermal



RBF provides professional engineering services specializing in geothermal power, recovered energy generation, and remote power with several geothermal resources. Specifically, RBF has provided engineering support for the evaluation and recommendation of chemical addition and optimization for treatment and filtration of geothermal brine resource. In addition, RBF has provided assistance with evaluation of available water resources for cooling tower make-up including the preparation of a comprehensive conceptual design report for a 5.9 MGD tertiary upgrade to an existing secondary WWTP.

Additional work tasks for RBF include assistance with a cooling tower pilot study that will increase cycle of concentration in the cooling water system, including evaluation of conventional chemical treatment programs and a newer patented alternative process technology to achieve zero or near-zero cooling tower blowdown. The water sources to be piloted may include raw, potable, and recycled water.

## Hydropower



RBF provides extensive staff experience in the analysis, siting, design, and development of hydropower projects, including regional, small and low-head hydroelectric facilities. For these projects, RBF applies our in-house multi-disciplinary capabilities to provide engineering, planning and project management for all phases of hydroelectric development, including hydraulic design, intakes, spillways, tunnels, penstocks, power transmission, electrical substations and environmental studies.

RBF also supports these projects through computer modeling of hydrologic and hydraulic conditions, evaluation of long-term daily watershed flow records, establishing Probable Maximum Flood flows for spillway design, estimation of monthly average flows for in-stream flow requirement, dam break assessments, hydraulics of underground conveyance systems, and waterhammer analysis for emergency shutdown conditions.

RBF staff has worked with the federal process dictated by FERC and NEPA, as well as local, state, and regional regulatory processes applicable to hydropower development, including the development of power purchase agreements.

Please contact RBF regarding Energy Development Services through the following regional contacts:

| <b>Region</b>  | <b>Contact</b>             | <b>Phone</b>                 | <b>Email</b>                       |
|--|----------------------------|------------------------------|------------------------------------|
| Energy Market Leader   | Michael Giorgione          | 858.810.1435                 | mgiorione@rbf.com                  |
| Orange / Los Angeles<br>Santa Barbara / San Bernardino /<br>Ventura Counties | Jim Sinnema<br>Bruce Cooke | 949.330.4173<br>949.855.3671 | jsinnema@rbf.com<br>bcooke@rbf.com |
| Riverside / Imperial<br>Counties / BLM Land                                  | Bill Green<br>Larry Truman | 760.341.6109<br>909.974.4947 | bgreen@rbf.com<br>ltruman@rbf.com  |
| San Diego County   | Erik Johnson               | 858.810.1463                 | ejohnson@rbf.com                   |
| Central Valley /<br><i>(including Inyo and Kern County)</i>                  | Bruce Grove                | 916.928.2636                 | bgrove@rbf.com Northern CA         |
| Nevada   | Mark Johnson               | 702.220.9955                 | mjohnson@rbf.com                   |
| Arizona  | Kevin Kugler               | 602.467.2200                 | kkugler@rbf.com                    |

[www.mbakercorp.com](http://www.mbakercorp.com)  
[www.rbf.com](http://www.rbf.com)