



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY**

Name(s) Kate E. Molinari	Project Number J1119
Project Title How the Conductivity and Salinity of Salt Water Affect Desalination: Discovering More Efficient Desalination Methods	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The primary objective of my experiment is to discover more efficient desalination methods by desalinating water samples with varying salinity percentages and conductivity levels, and observing how these factors affect two different existing desalination methods.</p> <p>Methods/Materials First, I tested the conductivity of three 118 ml water samples with the salinity percentages 5%, 10%, and 20%, each three times, with a homemade conductivity meter. After I tested the samples I compared the conductivity levels yielded from the different salinity samples, and I found that the conductivity of the samples increased when the salinity percentage of the sample increased. Next, I desalinated 9, 118 ml water samples, (each 3 samples with one of the salinity percentages above) with a thermal, stove top desalination device I had constructed, testing their post-desalination salinity percentages with a salt water refractometer, noting how long it took for each salt water sample to desalinate. I desalinated all 9 samples in my thermal stove top desalination device over the course of one day. I repeated these procedures, except with my homemade solar desalination device, over the course of several weeks. I compared, again, how each salinity affected the time it took to desalinate the water, and its post-desalination salinity percentage.</p> <p>Results I found that the higher the salinity percentage, the longer the water samples would take to desalinate, and the higher the salinity percentage of the fresh water produced, would be. The 20% salinity water samples took the longest to desalinate, and produced the highest salinity percentage, post-desalination samples. Additionally, these results were consistent with my homemade solar-desalination device.</p> <p>Conclusions/Discussion Primarily, through my experiment I found that salt water can conduct electricity, and subsequently, harnessing the conductivity of salt water could potentially provide us with the energy we need to desalinate salt water, eradicating the desalination-energy and efficiency problems through this possible solution.</p>	
Summary Statement After desalinating all the salt water samples for both methods of desalination, I found that the highest conductivity and salinity water samples took the longest to desalinate, and produced fresh water with the highest salinity percentages.	
Help Received I interviewed Nurit Katz, the Chief Sustainability Officer at U.C.L.A., to help me gain research about desalination factors, and recent improvements in the process.	