SAM Open Source Project

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Why Open Source?

✓ Transparency
  ✓ Look at the underlying model implementation

✓ Flexibility
  ✓ See the effect of a new module temperature model on a whole simulation
  ✓ Tweak a model to represent a new or unusual configuration

✓ Collaboration
  ✓ Add new technology models, sub-models, dispatch algorithms

✓ New ways to interact with the community
  ✓ NREL will continue to release public desktop & SDK versions, but now we can include user-contributed models and it’s easier to share work in progress
Are people interested in open source software?

Table 2: Open Source Usage Statistics 1/1/18 – 3/31/18

<table>
<thead>
<tr>
<th>Repository</th>
<th>Unique Visitors</th>
<th>Views</th>
<th>Unique Cloners</th>
<th>Clones</th>
</tr>
</thead>
<tbody>
<tr>
<td>LK</td>
<td>162</td>
<td>535</td>
<td>270</td>
<td>418</td>
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<tr>
<td>WEX</td>
<td>967</td>
<td>2376</td>
<td>244</td>
<td>326</td>
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<tr>
<td>SSC</td>
<td>552</td>
<td>3426</td>
<td>231</td>
<td>268</td>
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<td>SAM</td>
<td>823</td>
<td>3533</td>
<td>123</td>
<td>132</td>
</tr>
</tbody>
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NATIONAL RENEWABLE ENERGY LABORATORY
SAM Code Structure

- NREL-only
  - SAM-private
    - NREL Logos, User registration, API keys
    - Graphical User Interface.
    - Technology model libraries. Contains SAM SDK.
    - Custom widgets for SAM, contains DView project
    - Scripting support
    - wxWidgets 3.1.0, GUI framework
    - Visual Studio 2013, GCC 4.8.5 minimum, libc 2.17
    - Windows, OSX, Linux (CentOS 7, Ubuntu 16.04, Fedora 25, Mint 18.2)

- Core SAM code
  - SAM
  - SSC

- NREL libraries
  - WEX
  - LK

- Development dependencies
  - wxWidgets
  - C++ Compiler
  - Operating System
License Structure

LK and WEX repositories: MIT-type license
SSC and SAM: Mixed MIT-type license and GPLv3 license

• **Commercial entities: MIT-type license**
  - Encourages companies to use SSC and SAM as a foundation for growing their business and leveraging high-quality PV modeling algorithms

• **Research and non-profit entities: GPLv3 license**
  - Encourages research institutions to share back new innovations or make them publicly available so the whole community benefits
Contribution Process

✓ Read the contribution policy (still a work in progress!)
  ✓ https://github.com/NREL/SAM/blob/develop/CONTRIBUTING.md
✓ Agree to the contribution policy via email
✓ Scope your contribution
  ✓ Coordinate with our team if it’s a large feature!
✓ Add your model
✓ Build and test it
✓ Submit a pull request
NREL’s Open Source Work

✓ Incorporating Doxygen for generating documentation from annotated code

✓ Adding GoogleTest framework and building up unit tests
Learn More:
https://sam.nrel.gov/opensource
Thank you! Questions?

Janine Freeman - project lead, photovoltaic and wind models
Nick DiOrio - code architecture, battery storage models
Nate Blair - emeritus lead, financials, costs, systems
Steve Janzou - programming, utility rate structures (subcontractor)
Paul Gilman - user support and documentation (subcontractor)
Ty Neises - concentrating solar power models
Mike Wagner - concentrating solar power models