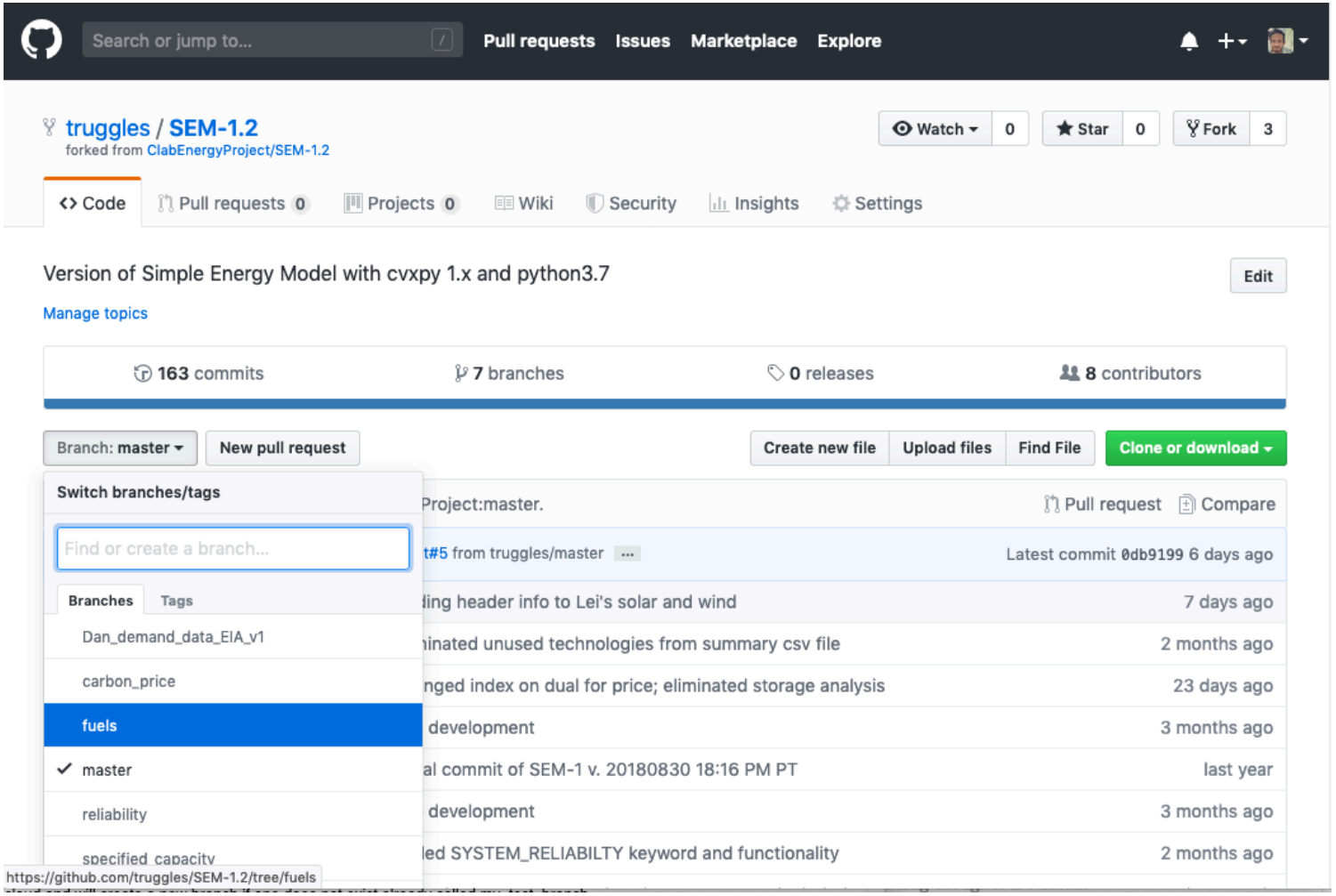
Some Git Basics

Tyler Ruggles

3 October 2019

CARNEGIE SCIENCE

Git Structure



Git Structure

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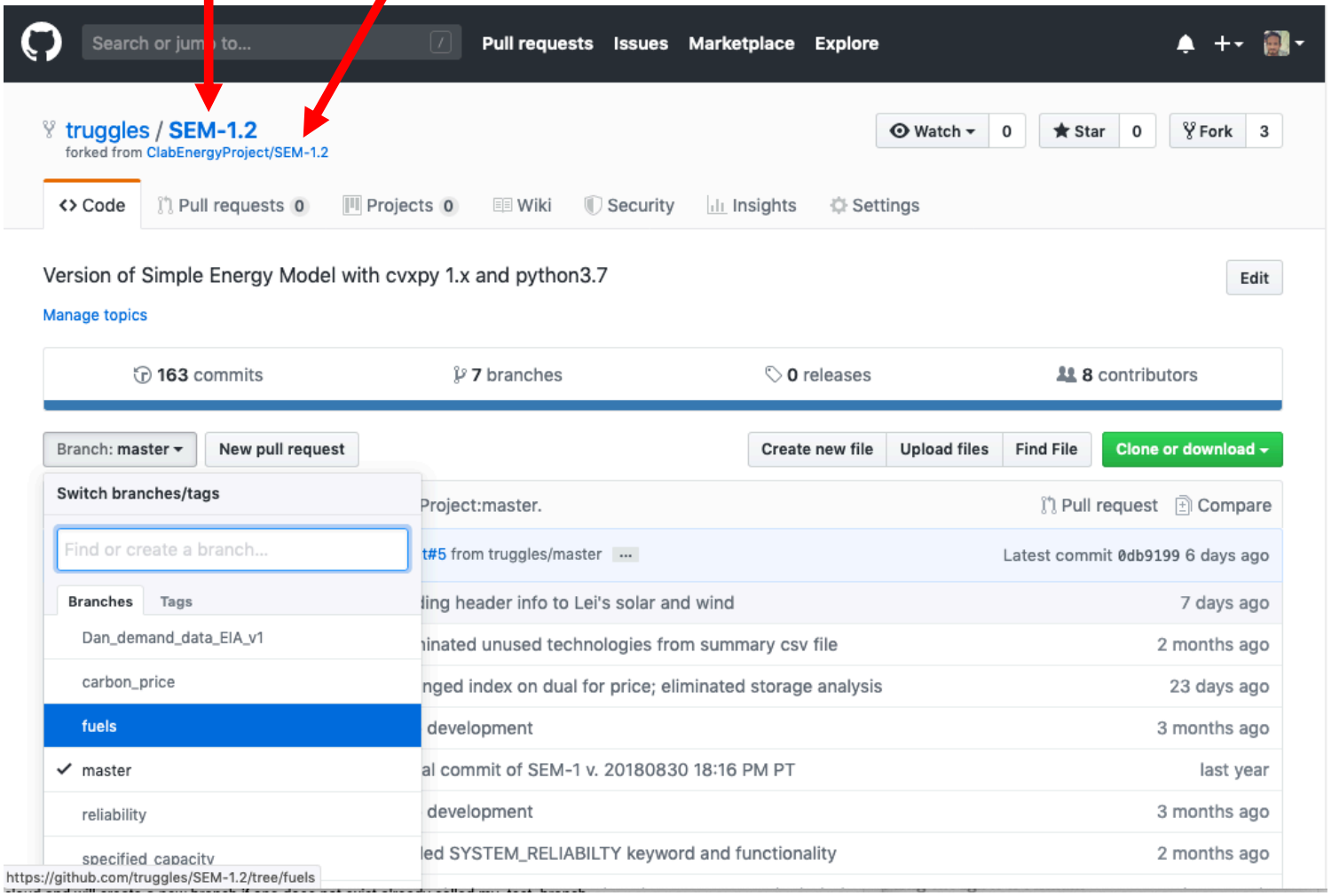

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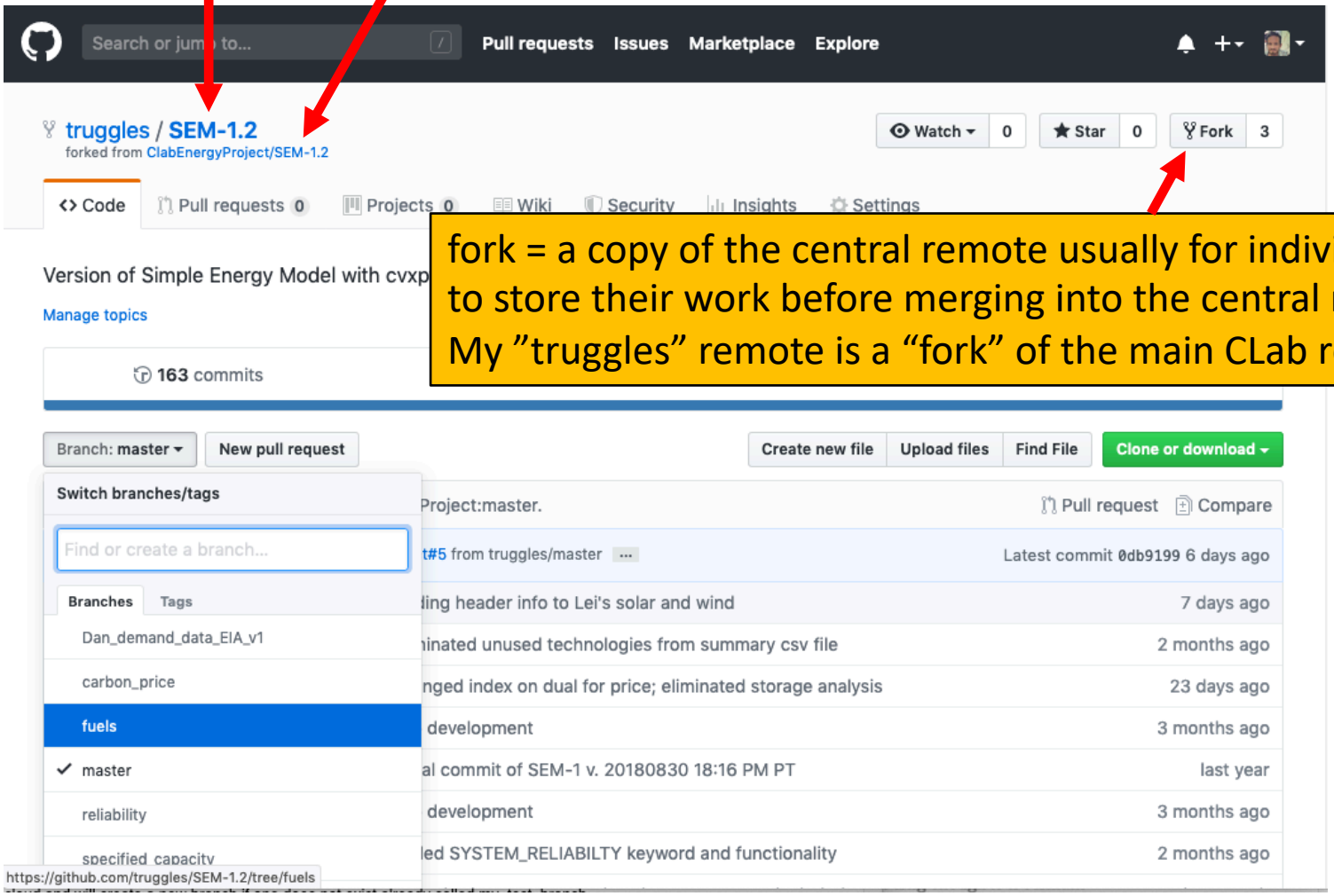

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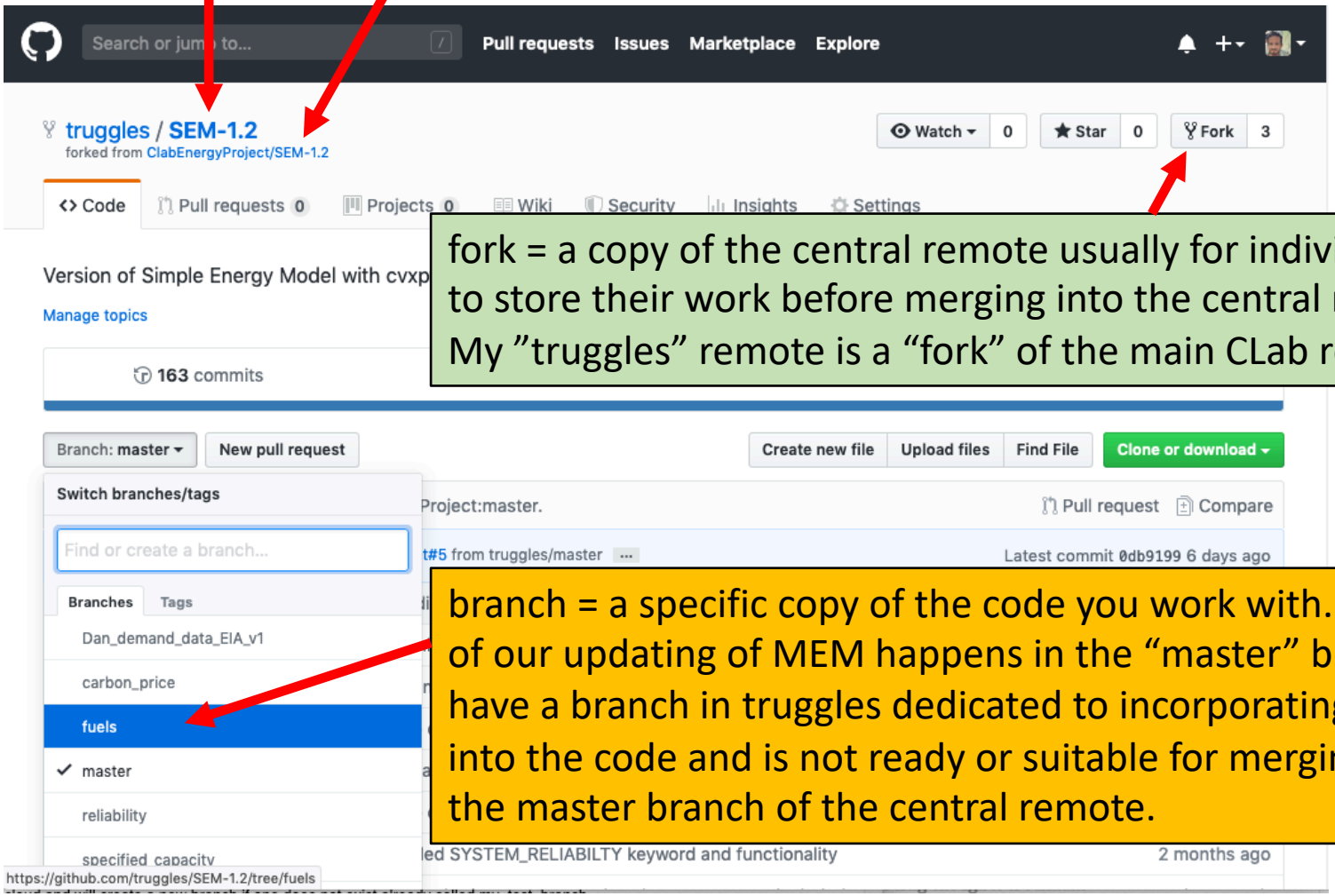

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branch = a specific copy of the code you work with. Most of our updating of MEM happens in the “master” branch. I have a branch in truggles dedicated to incorporating fuels into the code and is not ready or suitable for merging into the master branch of the central remote.

Git actions

- commit = after making changes to the code, saving and recording that work locally
- push = send the commits you have made to a certain remote and branch in the cloud
- pull = take updates from a specific remote and branch in the cloud and apply them to you local code
- checkout = this can do multiple things
  - Switch which branch is currently active in your code
  - Load a new branch locally from code in the cloud
  - Undo all changes you have made to a file before you commit the changes

Example workflow

- Tyler joins CLab and is planning to contribute to the central code.
- He starts by forking the central repository using the web interface (slide 3)
- Then here are some sample commands from the command line to check out the main CLab code as well as Tyler's remote.

```
$ mkdir ~/my_new_MEM
$ cd ~/my_new_MEM
$ git clone git@github.com:ClabEnergyProject/SEM-1.2.git # set up a new local repository of MEM-1.2 based on the code in the central repository
$ cd SEM-1.2
$ git remote add ruggles_remote git@github.com:truggles/SEM-1.2.git # add the truggles remote and locally name it ruggles_remote.  Now he can push his updates there
```

Making new branches and collaborating

Beware of the quotes “ in this text, it likely won’t work if you copy and paste them to the terminal

$ git branch # this lists the active branch and the other locally available ones
$ git checkout -b my_test_branch # create a new local branch for updates
$ git branch # see that you created and switch to a new branch marked with *
$ echo ”my awesome update and bug fix” >> Core_Model.py # append this string to the end of the file (silly example of editing code)
$ git diff # shows you all changes you have made
$ git commit Core_Model.py -m “My great bug fix” # commits the new work with the indicated message
$ git push ruggles_remote my_test_branch # this pushes the local commit to the truggles remote in the cloud and will create a new branch if one does not exist already called my_test_branch

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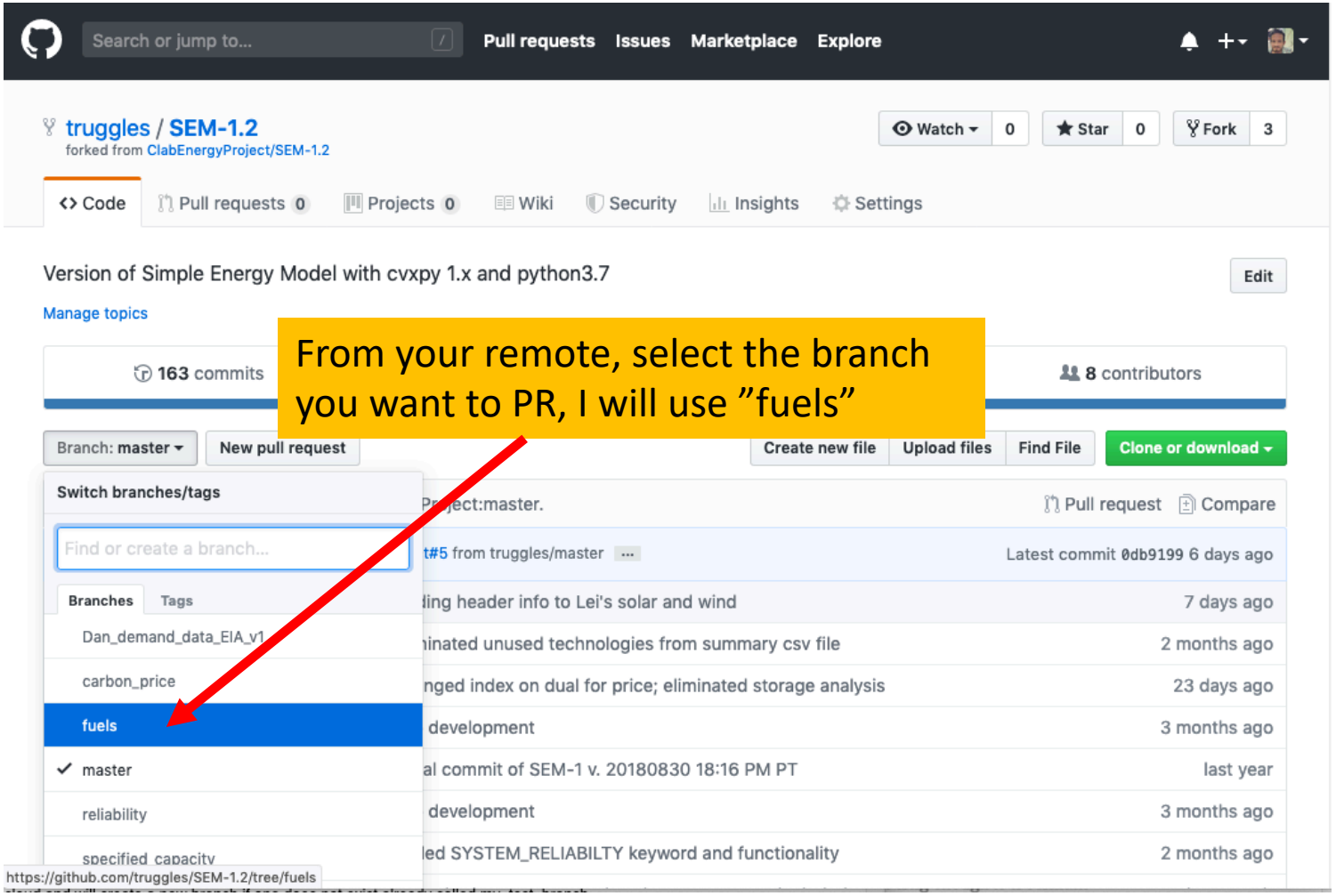
Now we want to merge this great work into the main CLab master branch

Pull Requests



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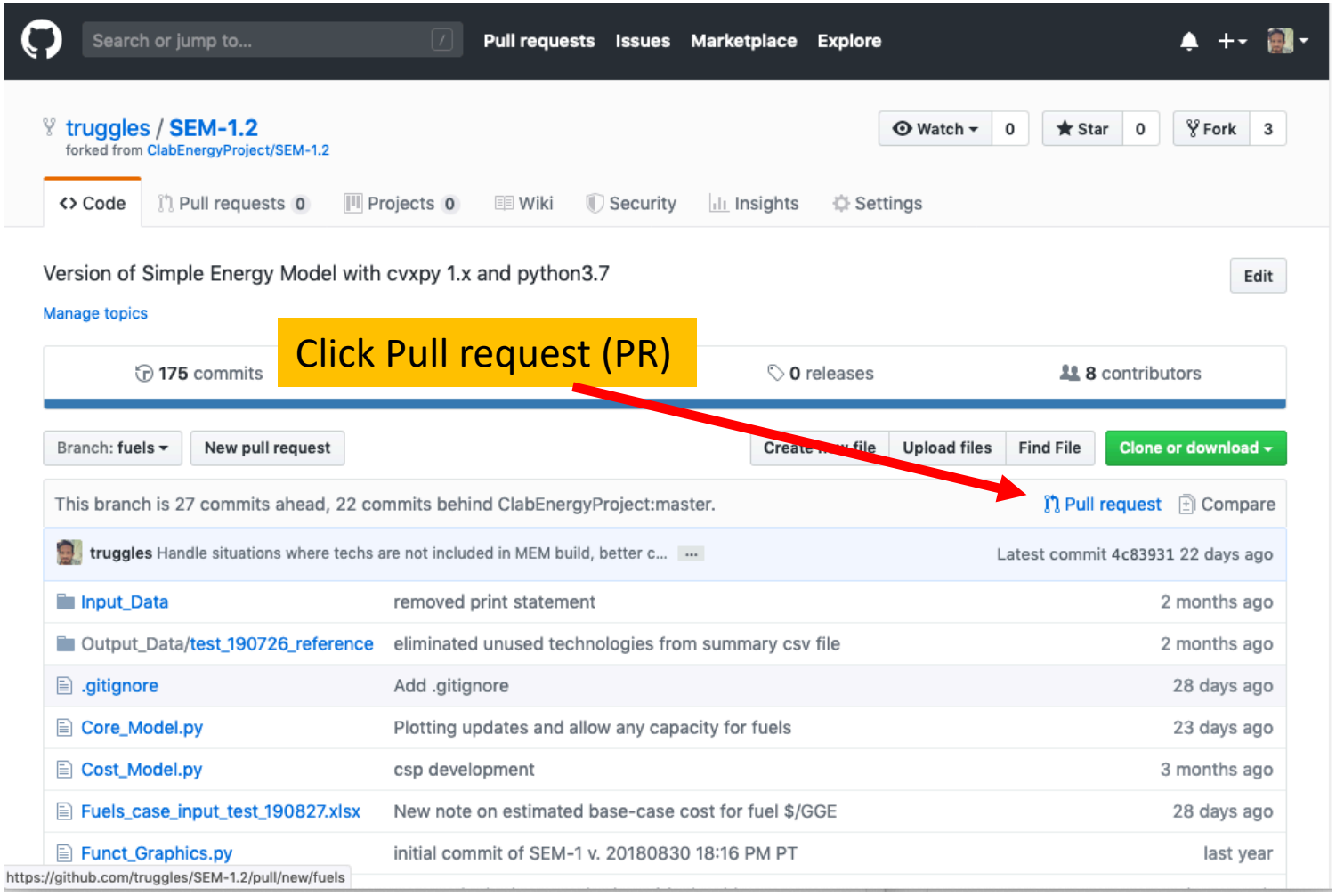
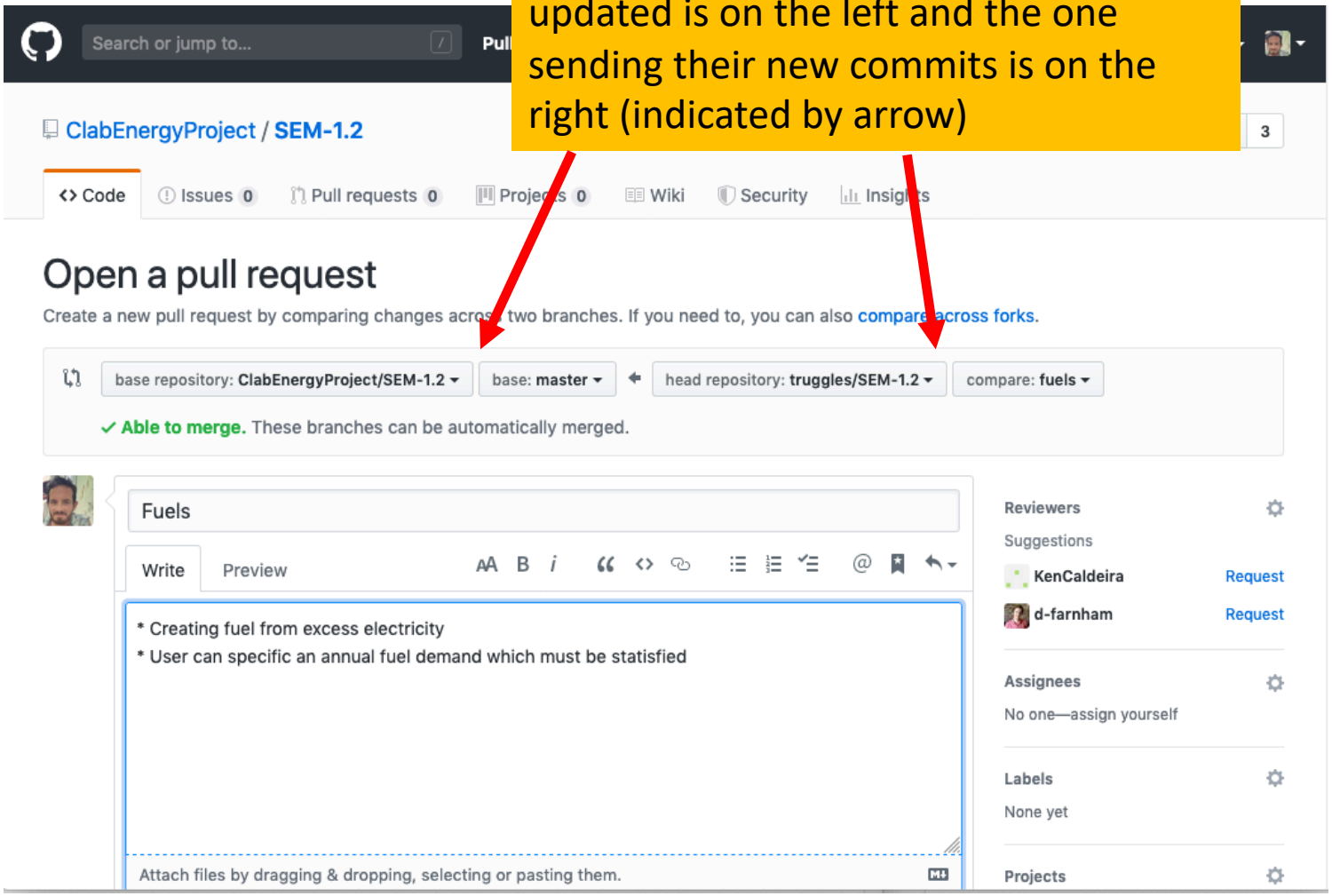


Pull Request

Make sure you have the correct remote and branches listed. The branch to be updated is on the left and the one sending their new commits is on the right (indicated by arrow)



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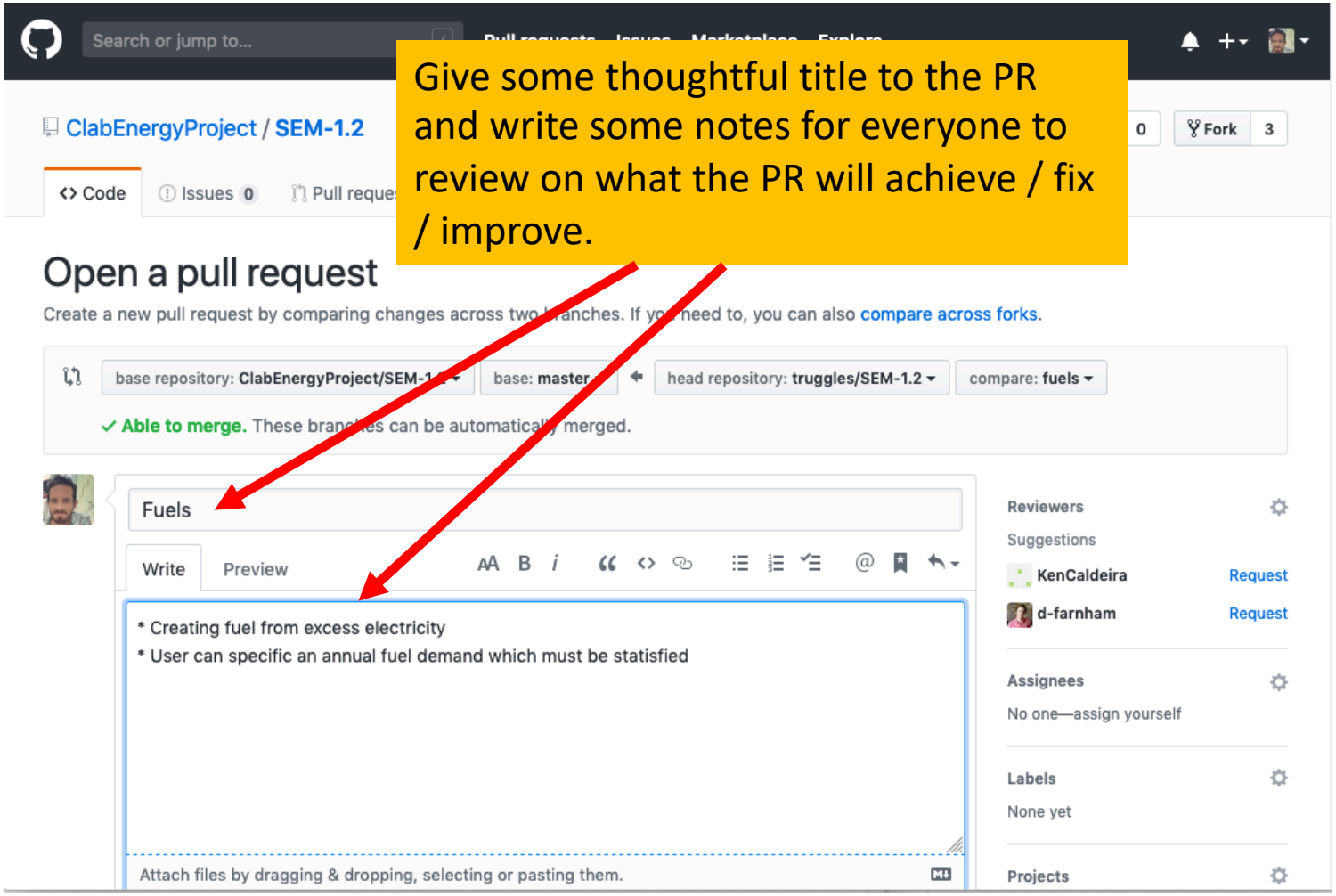

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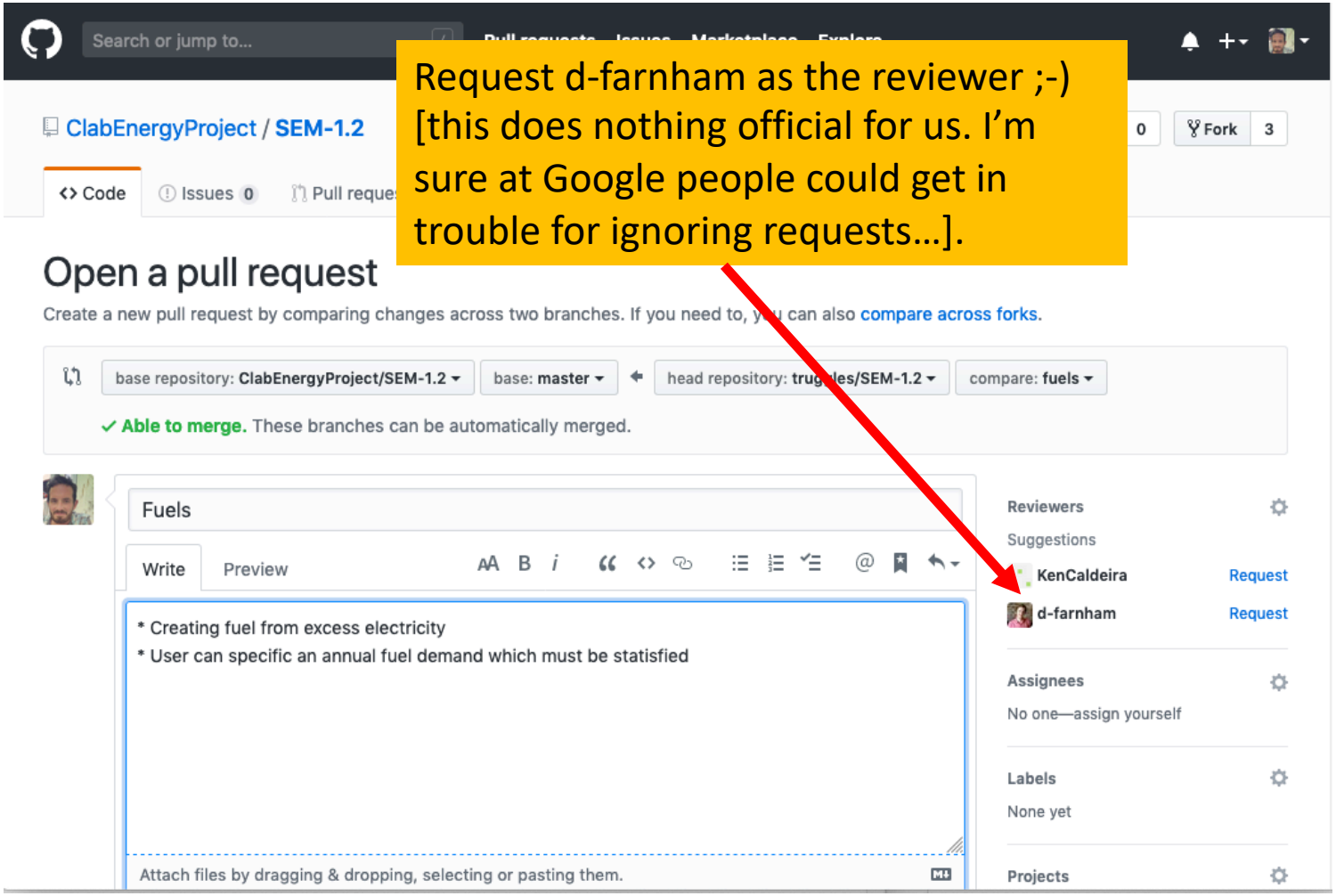

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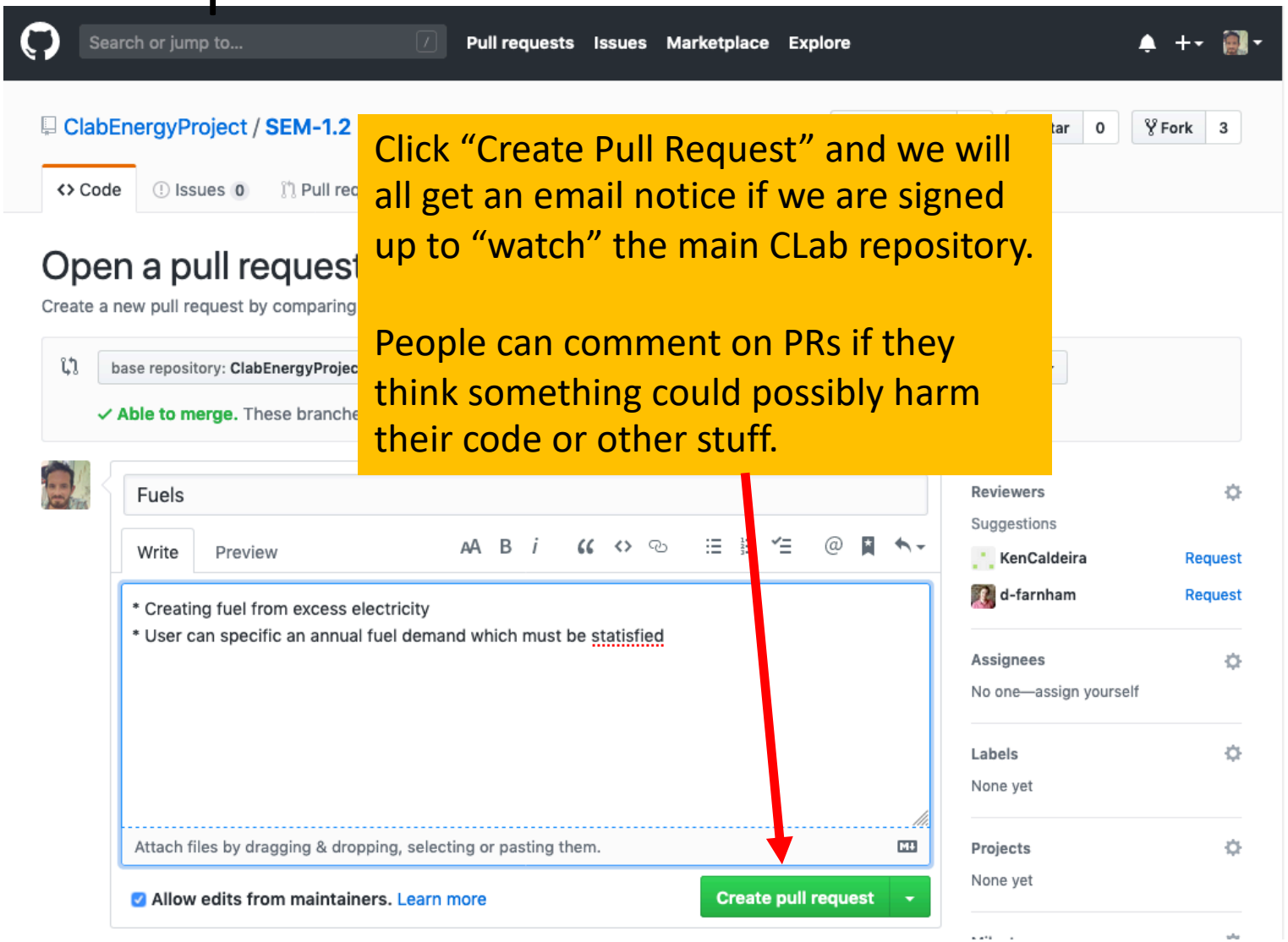

Click “Create Pull Request” and we will all get an email notice if we are signed up to “watch” the main CLab repository.

People can comment on PRs if they think something could possibly harm their code or other stuff.

Incorporating other people changes into your code

- When others make changes to the CLab master branch, you should consider if you want those changes in your code and:

$ git checkout master # this will switch your active local branch to the master branch
$ git pull # this will fetch (git term from grab) the code from the cloud and download it, then it will merge those downloaded updates into your active working area

Incorporating updates into other branches

- If Tyler wanted to incorporate changes to CLab master to his “fuels” branch he would:

$ git checkout fuels # switch to his fuels branch
$ git pull origin master # “origin” is the name of the first remote which creates the repository, because we used “git clone git@github.com:ClabEnergyProject/SEM-1.2.git” “origin” points to ClabEnergyProject