**Actions**

**-1** : discharging

**1** : charging

Action (Space) for an agent (i.e. Building):

Min action value: -1.0

Max action value: 1.0

Continous action space

**Box()** is an n-dimensional continuous space

Reward: **[11.0, 11.0, 11.0, 11.0, 11.0]** # List with length 5

**actor-environment-cycle**

1. All agents have the same action\_spaces and observation\_spaces. Note: If, within your aec game, agents do not have homogeneous action / observation spaces, apply SuperSuit wrappers to apply padding functionality: https://github.com/PettingZoo-Team/ SuperSuit#built-in-multi-agent-only-functions

2. Environments are positive sum games (-> Agents are expected to cooperate to maximize reward). This isn't a hard restriction, it just that standard algorithms aren't expected to work well in highly competitive games.

**Reward Function (what to punish/reward; how to balance multiple constraints):**

- Ensure it has a shaped reward function (i.e. gradient)

- Ensure positive terminal state has a reward greater than the expected reward of circling around terminal state

**Basic RBC Agent:**

=========================Completed=========================

Average Price Cost: 1.0293681508364116

Average Emmision Cost: 1.1468227439612875

Total time taken by agent: 3.9325165574846324s

**RandomAgent:**

=========================Completed=========================

Average Price Cost: 1.3568332500440168

Average Emmision Cost: 2.2124999712356987

Total time taken by agent: 11.85857089588535s

##### Soft-Actor Critic

- **0.0003**

Average Price Cost: 1.2631246521574349

Average Emmision Cost: 1.3799194447455116

Total time taken by agent: 18.661932483082637s

- **0.03**

Average Price Cost: 1.187861093052371

Average Emmision Cost: 1.2497194495733568

Total time taken by agent: 19.255995363695547s

- **0.003**

Average Price Cost: 0.9382863795344278

Average Emmision Cost: 1.0720828957954829

Total time taken by agent: 121.3242092159926s

=========================Completed=========================

Average Price Cost: 1.097866138989173

Average Emmision Cost: 1.3935978798402695

Total time taken by agent: 598.0791043067438s