The 17th Hole at TPC Sawgrass

The 17th hole at TPC Sawgrass is arguably the most recognized golf hole in the world. It is a par 3 with an island green. You could make a case that it is golf at its simplest: choose the club you hit 130 yards and aim for the green. You'll either hit it on the green or put it in the water (I'm neglecting the small possibility that you put it in the bunker on the island). I finally have my chance to play this iconic hole and I want to estimate the probability that I will make par (or better) on it.

I have estimated that from the tee: I have a 25% chance of hitting it in the water, 60% chance of hitting it on the green but being 20+ feet away from the hole, a 10% chance of hitting it on the green and being between 5 and 20 feet away, and a 5% chance of hitting the green and being less than 5 feet away. I hate to admit it, but I have never had a hole in one, so I don't have any chance of holing out from the tee. From the drop zone (where you hit after you put your tee shot in the water), I have a 1% chance of holing out (it is closer than the original tee), 80% chance of hitting it on the green and 19% chance of hitting it in the water again. The actual distribution of where I am on the green from the drop zone is irrelevant to determining whether I make par - I would be putting for 4 (or worse).

Below is a table that provides my historical probabilities for putting once I reach the green where entry (i, j) provides the probability that I start in area i of the green and end up in area j of the green.

		Long	Medium	Short	
		$20+$	$5-20$	<5	Hole
Long	$20+$	0	.15	.8	.05
Medium	$5-20$	0	.05	.8	.15
Short	<5	0	0	.15	.85

We will formulate a Markov Chain with multiple absorbing states to help us determine the probability that I make par or better on this hole. We will then provide the probability of absorption equations and solve them to determine this probability.